Vol. 994 Number 1

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UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Jan. 28, 1980. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,533,548, Re. S.N. 118,112, Filed Feb. 4, 1980, Cl. 229/48, METHOD OF ASCERTAINING VALIDITY OF HEAT SEAL AND PRODUCT OF SAID METHOD, Michael Taterka, et al., Owner of Record: *C. R. Bard Inc., Murray Hill, N.J.,* Attorney or Agent: Ronald A. Schapira, et al., Ex. Gp.: 241

3,941,752, Re. S.N. 120,465, Filed Feb. 11, 1980, Cl. 528/287, FLAME RETARDING LINEAR POLYESTERS AND SHAPED ARTICLES THEREOF, Hans-Jerg Kleiner, et al., Owner of Record: *Hoechst Aktiengesellschaft, Frankfurt am Main, Germany,* Attorney or Agent: Henry W. Koster, Ex. Gp.: 144

4,069,378, Re. S.N. 119,758, Filed Feb. 8, 1980, Cl. 526/328, SELF-EMULSIFYING ANAEROBIC COMPOSITION, Joann Demarco, Owner of Record: *Loctite Corporation, Newington, Conn.,* Attorney or Agent: Eugene F. Miller, et al., Ex. Gp.: 144

4,080,190, Re. S.N. 121,725, Filed Feb. 15, 1980, Cl. 71/67, SILOXANE-TIN COATINGS AND THEIR USE FOR PROTECTING MATERIALS FROM GROWTH OF PESTIFEROUS ORGANISMS, Gabriel H. Law, et al., Owner of Record: *Ameron, Inc., Monterey Park, Calif.,* Attorney or Agent: Robert L. Parker, et al., Ex. Gp.: 121

4,081,676, Re. S.N. 119,389, Filed Feb. 7, 1980, Cl. 250/272, ON-LINE SYSTEM FOR MONITORING SHEET MATERIAL ADDITIVES, Alexander Buchnea, et al., Owner of Record: *Sentrol Systems Ltd., West, Downsview, Ontario, Canada,* Attorney or Agent: Henry L. Shenier, et al., Ex. Gp.: 256

4,083,511, Re. S.N. 116,245, Filed Jan. 28, 1980, Cl. 242/107.4 A, SEAT BELT RETRACTOR, Haruyuki Ikesue, Owner of Record: *NSK-Warner K.K., Tokyo, Japan,* Attorney or Agent: Nelson H. Shapiro, Ex. Gp.: 242

4,085,230, Re. S.N. 120,761, Filed Feb. 11, 1980, Cl. 426/262, PROCESS FOR PRODUCING A ROASTED PEANUT PRODUCT, William M. Green, Owner of Record: *Inventor,* Attorney or Agent: B. B. Olive, Ex. Gp.: 172

4,109,703, Re. S.N. 110,923, Filed Jan. 10, 1980, Cl. 165/1, ENGINE COOLING SYSTEM FLUSHING APPARATUS AND METHOD, John A. Babish, et al., Owner of Record: *Wynn Oil Company, Fullerton, Calif.,* Attorney or Agent: William W. Haelfliger, Ex. Gp.: 345

4,114,101, Re. S.N. 119,664, Filed Feb. 8, 1980, Cl. 455/455, DIGITAL FREQUENCY DISPLAY DEVICE, Tadao Sekiguchi, Owner of Record: *Trio Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Melvin R. Jenney, et al., Ex. Gp.: 233

4,115,235, Re. S.N. 118,450, Filed Feb. 4, 1980, Cl. 204/195 S, APPARATUS FOR CONVEYING A GAS SAMPLE THROUGH AN ANALYZER CHAMBER, David M. Capone, Owner of Record: *Ametek Inc., New York, N.Y.,* Attorney or Agent: Stanley J. Price, Jr. et al., Ex. Gp.: 114

4,136,308, Re. S.N. 121,458, Filed Feb. 14, 1980, Cl. 318/696, STEPPING MOTOR CONTROL, Kenyon M. King, Owner of Record: *Inventor,* Attorney or Agent: Robert L. Parker, et al., Ex. Gp.: 217

4,138,182, Re. S.N. 119,665, Filed Feb. 8, 1980, Cl. 339/89 M, PIN TYPE JACK-AND-PLUG COUPLING DEVICE, Hiroshi Muratsuka, Owner of Record: *Trio Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Melvin R. Jenney, et al., Ex. Gp.: 322

4,146,745, Re. S.N. 082,299, Filed Oct. 5, 1979, Cl. 179/1 E, LOUDSPEAKER ENCLOSURE WITH MULTIPLE ACOUSTICALLY ISOLATED DRIVERS AND A COMMON PORT, Thomas A. Froeschle, et al., Owner of Record: *Bose Corporation, Framingham, Mass.,* Attorney or Agent: Charles Hieken, Ex. Gp.: 345

4,161,325, Re. S.N. 093,862, Filed Nov. 13, 1979, Cl. 280/81 R, SUPPLEMENTARY SUPPORT FOR VEHICLES, Herbert Schneider, Owner of Record: *Sud Chemie AG, Munchen, West Germany,* Attorney or Agent: Max Dressler, et al., Ex. Gp.: 316

4,162,908, Re. S.N. 121,078, Filed Feb. 13, 1980, Cl. 65/60 D, METHOD OF PRODUCING SYNTHETIC QUARTZ GLASS, APPARATUS FOR THE PRACTICE OF THE METHOD, AND USE OF THE SYNTHETIC QUARTZ GLASS, Karlheinz Rau, et al., Owner of Record: *Heraeus Quarzschmelze GmbH, Hanau, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 173

4,179,420, Re. S.N. 120,373, Filed Feb. 11, 1980, Cl. 260/21, WATER SOLUBLE INSULATING VARNISH, Deno Laganis, Owner of Record: *Schenectady Chemicals, Inc., Schenectady, N.Y.,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 144

PATENT NOTICES

Certificates of Correction for the Week of May 6, 1980

Re. 30,200	4,168,781	4,178,432	4,185,121
D. 254,017	4,169,077	4,179,303	4,185,184
D. 254,127	4,169,535	4,179,448	4,185,311
3,927,017	4,169,843	4,179,491	4,185,342
3,993,069	4,171,062	4,179,798	4,185,416
4,070,152	4,171,220	4,180,626	4,185,437
4,076,892	4,172,090	4,180,992	4,185,487
4,092,074	4,172,304	4,181,259	4,185,618
4,105,072	4,172,632	4,181,370	4,185,720
4,109,076	4,172,808	4,181,427	4,185,957
4,120,355	4,173,987	4,181,507	4,186,069
4,129,705	4,174,670	4,181,509	4,186,114
4,135,729	4,175,795	4,182,044	4,186,175
4,136,052	4,176,092	4,182,079	4,186,201
4,138,712	4,176,167	4,183,604	4,186,268
4,144,738	4,176,560	4,183,914	4,186,519
4,153,978	4,176,575	4,183,963	4,186,707
4,155,764	4,176,706	4,184,371	4,186,804
4,156,268	4,177,211	4,184,430	4,186,856
4,160,079	4,177,706	4,184,483	4,188,040
4,161,438	4,177,778	4,184,564	4,188,139
4,161,660	4,177,816	4,184,724	4,189,607
4,163,518	4,178,098	4,185,080	

Disclaimers

3,412,562.—*Samuel Clifford Doughty*, Burlingame, Calif. STRUCTURAL WALL AND METHOD. Patent dated Nov. 26, 1968. Disclaimer filed Jan. 23, 1980, by the assignee, *Santa Fe-Pomeroy, Inc.*

Hereby enters this disclaimer to claims 9 and 10 of said patent.

4,069,738.—*Randall D. McClure*, Decatur, Ill. INSULATION RETAINER AND ATTACHMENT METHOD THEREFOR. Patent dated Jan. 24, 1978. Disclaimer filed Mar. 7, 1980, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1 through 10 of said patent.

Dedication

3,905,395.—*Klaus Peter Hupe*, Karlsruhe, Germany. MIXING CHAMBER. Patent dated Sept. 16, 1975. Dedication filed Feb. 22, 1980, by the assignee, *Hewlett-Packard GmbH.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers and Dedications

3,985,345.—*Peter Michael Jakob*. Offenbach, Germany. CONTINUOUS COMPOUNDING AND MIXING APPARATUS. Patent dated Oct. 12, 1976. Disclaimer and Dedication filed Mar. 14, 1980, by the assignee, *Colortronic Reinhard & Co. KG.*

Hereby disclaims and dedicates to the Public all claims of said patent.

4,097,382.—*Ronald DeWayne Cruea*, Carlisle, Ohio. DEWATERING SCREEN. Patent dated June 27, 1978. Disclaimer and Dedication filed Mar. 6, 1980, by the assignee, *The Black Clawson Company.*

Hereby disclaims and dedicates to the Public all claims of said patent.

Patent Applications Available for Licensing or Sale

4,179,637. INCANDESCENT LIGHT BULB WITH MULTIFILAMENTS PROVIDING MULTIPLE LIVES. James V. Santora, 1228 Irvine Ave., Newport Beach, Calif. 92660.

4,063,374. GRAVE OPENING AND CLOSING MACHINE. Corinthian Washington, P.O. Box 1302, Mansfield, La. 71052

3,979,852. AUTOMATIC FISHING MACHINE. Gilbert C. Johnson, P.O. Box 303, Dyer, Ind. 46311.

3,941,132. INTERCONNECTED SURGICAL SPONGES. Arlene Lenaghan, 674 Rudgate Road, Bloomfield Hills, Mich. 48013.

Re. 29,178. SHEET RECIRCULATOR. Richard H. Colwill. 1007 Hellam St., Monterey, Calif. 93940.

Applications for license may be addressed to Patent Counsel, Gas Turbine Division, General Electric Company, 1 River Road, Building #500, Room 218, Schenectady, N.Y. 12345.

4,188,781. NON-LINEAR DUAL MODE REGULATOR CIRCUIT.

Application for license may be addressed to the General Electric Company, Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston, Ave. Bridgeport, Conn. 06602.

4,132,360. PULSATING HAIR DRYER.

The RCA Corporation offers to grant nonexclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Vice President, Licensing, 30 Rockefeller Plaza, New York, N.Y. 10020.

Re. 30,173. CURRENT MIRROR AMPLIFIER.

4,176,432. METHOD FOR ESTABLISHING UNIFORM CATHODE-TO-GRID SPACING IN AN ELECTRON GUN.

4,176,551. FIBER-OPTIC THERMOMETER.

4,176,552. FIBER-OPTIC THERMOMETER.

4,177,392. CURRENT SWITCHING NETWORKS.

4,177,393. DRIVE CIRCUIT FOR A TELEVISION DEFLECTION OUTPUT TRANSISTOR.

4,178,190. METHOD OF MAKING A BIPOLAR TRANSISTOR WITH HIGH-LOW EMITTER IMPURITY CONCENTRATION.

4,178,191. PROCESS OF MAKING A PLANAR MOS SILICON-ON-INSULATING SUBSTRATE DEVICE.

4,178,531. CRT WITH FIELD-EMISSION CATHODE.

4,178,546. ALTERNATOR TEST APPARATUS AND METHOD.

4,178,564. HALF WAVE PROTECTION LAYERS ON INJECTION LASERS.

4,178,605. COMPLEMENTARY MOS INVERTER STRUCTURE.

4,178,614. READOUT OF A DENSELY PACKED CCD.

4,178,974. FLOW CONTROLLER.

4,179,178. PLUG-IN CIRCUIT CARTRIDGE WITH ELECTROSTATIC CHARGE PROTECTION.

4,179,308. LOW COST HIGH EFFICIENCY GALLIUM ARSENIDE HOMOJUNCTION SOLAR CELL INCORPORATING A LAYER OF INDIUM GALLIUM PHOSPHIDE.

4,179,642. RASTER CORRECTION CIRCUIT WITH LOW DISSIPATION RESISTIVE DAMPING.

4,179,703. SYSTEM FOR TRANSMITTING TWO COLOR TV SIGNALS.

4,179,708. OPTICAL PLAYBACK SYSTEM HAVING INCREASED DEPTH-OF-FIELD.

4,180,760. FLAT CATHODE RAY TUBE HAVING MAGNETICALLY COLLIMATED ELECTRON BEAM DEVICE.

4,180,781. BIASING AND DRIVE CIRCUITRY FOR QUASI-LINEAR TRANSISTOR AMPLIFIERS.

4,180,782. PHANTOM FULL-BRIDGE AMPLIFIER.

4,180,783. PHASE LOCK LOOP DATA TIMING RECOVERY CIRCUIT.

4,180,820. CIRCULARLY POLARIZED ANTENNA SYSTEM USING A COMBINATION OF HORIZONTAL AND BENT VERTICAL DIPOLE RADIATORS.

4,180,822. OPTICAL SCANNER AND RECORDER.

4,180,830. DEPTH ESTIMATION SYSTEM USING DIFFRACTIVE EFFECTS OF THE GROOVES AND SIGNAL ELEMENTS IN THE GROOVES.

Re. 30,195. GUIDED BEAM FLAT DISPLAY DEVICE.

4,181,755. THIN FILM PATTERN GENERATION BY AN INVERSE SELF-LIFTING TECHNIQUE.

4,181,862. HIGH SPEED RESETTABLE DYNAMIC COUNTER.

4,181,864. MATCHING NETWORK FOR SWITCHABLE SEGMENTED ULTRASONIC TRANSDUCERS.

4,181,871. PROXIMITY FOCUSED ELECTRON BEAM GUIDE DISPLAY DEVICE INCLUDING MESH HAVING APERTURES NO GREATER THAN 26 MICRONS IN ONE DIMENSION.

4,181,874. TELEVISION S-CORRECTION CIRCUIT WITH IMPROVED LINEARITY.

4,181,915. LED CHANNEL NUMBER DISPLAY RESPONSIVE TO AMBIENT LIGHT LEVEL.

4,181,916. LIQUID CRYSTAL CHANNEL NUMBER DISPLAY RESPONSIVE TO AMBIENT LIGHT LEVEL.

4,182,961. INHIBITABLE COUNTER STAGE AND COUNTER.

4,182,968. ELECTRON MULTIPLIER WITH ION BOMBARDMENT SHIELDS.

4,182,969. ELECTRON MULTIPLIER DEVICE WITH SURFACE ION FEEDBACK.

4,182,994. PHASE LOCKED LOOP TUNING SYSTEM INCLUDING STABILIZED TIME INTERVAL CONTROL CIRCUIT.

4,182,995. LASER DIODE WITH THERMAL CONDUCTING, CURRENT CONFINING FILM.

4,183,002. WINDING STRUCTURE.

4,183,020. AMPLIFIER WITH FIELD EFFECT AND BIPOLAR TRANSISTORS.

4,183,041. SELF BIASING OF A FIELD EFFECT TRANSISTOR MOUNTED IN A FLIP-CHIP CARRIER.

4,183,044. REMOTE CONTROL TV SUBCARRIER PHASE SHIFTER SYSTEM.

4,183,045. CHROMA KEYING SELECTOR SYSTEM.

4,183,059. TRACK SKIPPER FOR A VIDEO DISC PLAYER.

4,183,060. CAPACITANCE DISTANCE SENSOR APPARATUS FOR VIDEO DISC PLAYER/RECORDER.

4,183,062. ROW ADDRESSING APPARATUS FOR A BISTABLE DISPLAY DEVICE.

4,184,123. DOUBLE-TUNED OUTPUT CIRCUIT FOR HIGH POWER DEVICES USING COAXIAL CAVITY RESONATORS.

4,184,163. BROAD BAND, FOUR LOOP ANTENNA.

4,184,174. COMB FILTER SYSTEM.

4,184,750. NOVEL LIQUID CRYSTAL DYESTUFFS AND ELECTRO-OPTIC DEVICES INCORPORATING SAME.

4,185,210. CONTACT DE-BOUNCING CIRCUIT WITH COMMON MODE REJECTION.

4,185,211. ELECTRICAL CIRCUITS.

4,185,212. LEVEL SHIFTING CIRCUIT.

4,185,299. SYNCHRONIZATION SIGNAL SEPARATOR CIRCUIT.

4,185,319. NON-VOLATILE MEMORY DEVICE.

4,185,585. APPARATUS FOR SIMULTANEOUSLY PROCESSING A PLURALITY OF SUBSTRATES.

4,186,032. METHOD FOR CLEANING AND DRYING SEMICONDUCTORS.

4,186,330. VOLTAGE REGULATOR FOR A TELEVISION DEFLECTION CIRCUIT.

The General Electric Company is prepared to grant nonexclusive licenses under the following patents on reasonable terms to domestic manufacturers and requests publication of this notice in the Official Gazette:

4,155,262. METAL OXIDE VARISTOR PRESSURE SENSOR AND METHOD.

4,161,730. RADIO DETERMINATION USING SATELLITES TRANSMITTING TIMING SIGNALS WITH CORRECTION BY ACTIVE RANGE MEASUREMENT.

4,161,734. POSITION SURVEILLANCE USING ONE ACTIVE RANGING SATELLITE AND TIME OF ARRIVAL FROM AN INDEPENDENT SATELLITE.

4,167,730. COMPRESSION OF DATA ON STATUS OF REMOTE EQUIPMENT.

Applications for licenses should be addressed to: Division Patent Counsel, General Electric Company, Space Division, P.O. Box 8555, Philadelphia, Pa. 19101.

Applications for licenses may be addressed to the Patent Counsel, Mobile Radio Products Department, General Electric Company, Mountain View Road, Lynchburg, Va. 24502.

4,179,661. CIRCUIT FOR PROGRAMMING THE SEARCH CIRCUIT OF A RADIO RECEIVER.

Applications for license may be addressed to: Division Patent Counsel, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Avenue, Philadelphia, Pa. 19142.

4,086,459. ROD ARRAY VACUUM SWITCH FOR HIGH VOLTAGE OPERATION.

Patented on April 25, 1978 on an application of Joseph A. Rich.

4,128,748. HIGH-CURRENT VACUUM SWITCH WITH REDUCED CONTACT EROSION.

Patented on December 5, 1978 on an application of James M. Lafferty.

Bankruptcy Sale: For sale U.S. Patents 3,752,527—Collapsible crutch and 3,730,198—Pneumatic hospital bed. Sale of trustee's right, title and interest subject to approval of Bankruptcy Court. Submit offers to A. J. Calhoun, Trustee for Medical Directions, Inc., 100 N. Main Building, Memphis, Tenn. 38103. Phone 901–525–4742.

4,136,513. AUTOMATIC TIME COMPENSATOR FOR WATCHES AND CLOCKS NEUTRALIZING TIME LOSS AND TIME GAIN. Licenses available from V. A. Leonard, P.O. Box 2184, Denton, Tex. 76201.

Application for license may be addressed to: Division Patent Counsel, Switchgear & Distribution Transformer Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa. 19142.

4,184,186. CURRENT LIMITING DEVICE FOR AN ELECTRIC POWER SYSTEM.

Application for license may be addressed to: the Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,431,903. FURNACE HUMIDIFIER MOUNTING MEANS.

3,437,318. DUAL-MOUNT FURNACE HUMIDIFIER.

3,736,765. APPLIANCE INCLUDING ELECTRIC DIAGNOSIS MEANS.

3,921,254. HINGE STRUCTURE.

4,173,865. AUXILIARY COIL ARRANGEMENT.

4,175,575. DISHWASHER WITH OSCILLATING ROTARY SPRAY ARM.

4,180,231. VIBRATION DAMPENING SUPPORT.

4,180,297. SEALING GROMMET IN A REFRIGERATOR CABINET.

The following two patents are offered by Chuck Henderson, 12300 39th Ave., Kenosha, Wis., 53142.

4,166,517. PILOTS POWER ELEVATOR.

4,153,000. FLOATING AIR ERECTING PAINTING PRINT.

The following patents are offered by Champion International Corporation, Knightsbridge, Hamilton, Ohio 45020.

4,142,967. PROCESS FOR ENHANCING RECOVERY OF TALL OIL SOAP FROM BLACK LIQUOR.

4,140,288. METHOD FOR SPLICING PLASTIC SHEET MATERIAL.

4,138,356. ENCAPSULATED FLAME RETARDANT SYSTEM.

4,137,977. HYDRAULIC WEIGHING SYSTEM.

4,134,322. USE OF MICROENCAPSULATED GLUE IN THE MANUFACTURE OF ENVELOPES.

4,113,919. PROCESS FOR IN SITU FORMATION OF A TREE DERIVED RESINOUS ADHESIVE COMPOSITION.

4,112,173. CONCRETE MODULE UNIT.

4,109,041. CONSTRUCTION PANEL WITH NON-SKID SURFACE AND METHOD OF FABRICATION.

4,094,187. STACK GAS ANALYZING SYSTEM WITH CALIBRATING/SAMPLING FEATURE.

4,056,342. FIBREBOARD MANUFACTURE.

4,028,551. APPARATUS AND METHOD FOR CORONA DISCHARGE PRIMING A DILECTRIC WEB.

4,028,537. PRODUCT PROCESSING SYSTEM WITH PRICE PRINTER.

3,994,110. THREE HOUR FIRE RESISTANT DOOR, PANEL OR BUILDING ELEMENT.

3,986,951. CHLORINE BASED BLEACHERY EFFLUENT TREATMENT.

3,968,060. ENCAPSULATED FLAME RETARDANT SYSTEM.

4,093,256. LOCKING MECHANISM FOR AUTOMOBILE SKIRTS.

4,180,374. BRISTOW WELL PUMP PROTECTION SYSTEM.

3,715,871. SMOG ELIMINATOR.

Send Correspondence to: Brames, Bopp, & Haynes, 900 Sycamore Building, 19 South Sixth St., Terre Haute, Ind. 47807.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents & Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a nondisclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

Chief, Intellectual Properties Division
OTJAG, DEPARTMENT OF THE ARMY
Room 2D/444, Pentagon, Washington, D.C. 20310

Patent application 6-003,175. Near Carrier AM-FM Calibration Technique. Filed Jan. 15, 1979.

Patent application 6-009,000. Tire Removing Tool. Filed Feb. 5, 1979.

Patent application 6-010,551. Blinker Aiming Post Light. Filed Feb. 9, 1979.

Patent application 6-011,480. Digital Fluidic Output Force Balance Accelerometer. Filed Feb. 12, 1979.

Patent application 6-021,037. A Method for the Removal of Phosgene Impurities from Boron Trichloride. Filed Mar. 16, 1979.

Patent application 6-025,632. Magnesium Anodize Bath Control. Filed Mar. 30, 1979.

Patent application 6-029,421. Array Antenna Controller. Filed May 11, 1979.

Patent application 6-033,936. Projectile Pallet Truck. Filed Apr. 27, 1979.

Patent application 6-042,681. Output Coupling System for Near-Millimeter Microwave Source. Filed May 25, 1979.

Patent application 6-042,688. Multi-Beam Antenna Controller. Filed May 25, 1979.

Patent application 6-047,675. Optical Memory with Fiber Optic Light Guide. Filed June 12, 1979.

Patent application 6-047,676. Improved Null Mask. Filed June 12, 1979.

Patent application 6-050,365. Multilayer Store Beam Accessed Memory. Filed June 20, 1979.

Patent application 6-056,581. Chemical Protective, Fire Resistant Composition. Field July 11, 1979.

Patent application 6-066,598. Castable TNT Compositions Containing a Broad Spectrum, Preformed Thermoplastic Polyurethane Elastomer Additive. Filed Aug. 14, 1979.

Patent application 733,658. Snap Ring Bearing for a Gun Barrel Bushing. Filed Oct. 18, 1976.

Patent application 842,835. Optical Sight Mount. Filed Oct. 17, 1977.

Patent application 871,171. Helical Lock for Automatic Gun. Filed Jan. 23, 1978.

Patent application 904,052. Electrically Energized Impact Detonated Projectile with Safety Device. Filed May 8, 1978.

Patent application 916,167. Cartridge for Reducing Bore Erosion and Extending Barrel Life. Filed June 16, 1978.

Patent application 921,390. Prepackaged Ammunition System. Filed July 3, 1978.

Patent application 930,827. Front Sight for Small Arms. Filed Aug. 3, 1978.

Patent application 931,356. Constant Power Regenerative Magnetic Switching Regulator. Filed Aug. 7, 1978.

Patent application 939,760. Method of Bonding Propellants Containing Mobile Constituents. Filed Sept. 5, 1978.

Patent application 940,545. Technique for Passivating Stainless Steel. Filed Sept. 8, 1978.

Patent application 941,446. Bead Breaker. Filed Sept. 11, 1978.

Patent application 944,489. Method for Connecting to Semiconductor Chips without the Use of Wires. Filed Sept. 21, 1978.

Patent application 962,436. Rifle Adapter Assembly with Hold Open Feature. Filed Nov. 20, 1978.

Patent 4,104,953. Machine Gun Barrel for Firing Blanks. Filed Feb. 14, 1977. Patented Aug. 8, 1978. Not available NTIS.

Patent 4,126,080. High Velocity Anti-Surge Spring Assembly. Filed Apr. 29, 1977. Patented Nov. 21, 1978. Not available NTIS.

Patent 4,126,955. High Velocity Tapered Bore Gun and Ammunition. Filed Mar. 17, 1977. Patented Nov. 28, 1978. Not available NTIS.

Patent 4,128,040. Blank Firing Adapter. Filed June 2, 1977. Patented Dec. 5, 1978. Not available NTIS.

Patent 4,128,041. Weapon Elevating Mechanism Having an an Automatic Clutch. Filed Oct. 3, 1977. Patented Dec. 5, 1978. Not available NTIS.

Patent 4,128,754. Arc Spray Welding Replaceable Electrode Tip. Filed Mar. 6, 1978. Patented Dec. 5, 1978. Not available NTIS.

Patent 4,131,052. Drum Cam with Anti Hang-Fire Feature. Filed July 5, 1977. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,137,893. Riot Control Weapon. Filed Oct. 31, 1977. Patented Feb. 6, 1979. Not available NTIS.

Patent 4,141,276. Locking and Firing Mechanism for Rotating-Cam Actuated Weapons. Filed Aug. 1, 1977. Patented Feb. 27, 1979. Not available NTIS.

Patent 4,152,091. Numerical Controlled Rotary Cutting Tool Extension. Filed Nov. 25, 1977. Patented May 1, 1979. Not available NTIS.

Patent 4,160,927. Ferroelectric Ceramic Devices. Filed Apr. 5, 1977. Patented July 10, 1979. Not available NTIS.

Patent 4,162,499. Flush-Mounted Piggyback Microstrip Antenna. Filed Oct. 26, 1977. Patented July 24, 1979. Not available NTIS.

Patent 4,164,650. Means for Reducing Nuclear Radiation-Induced Fluorescence Noise in Fiber-Optics Communications Systems. Filed July 8, 1977. Patented Aug. 14, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

Patent application 6-060,066. Fully Asynchronous Input/Output Data Buffer Apparatus. Filed July 24, 1979.

Patent application 6-063,510. Insulated Structural Bushings. Filed Aug. 3, 1979.

Patent application 6-063,872. Adjustable Electronic Circuit Card Supporter. Filed Aug. 3, 1979.

Patent application 6-064,337. Image Enhancement Using On-Line Spatial Filtering. Filed Aug. 3, 1979.

Patent 4,168,273. Method for the Preparation of Glycidyl 2,2-Dinitro-2-Fluoroethoxide. Filed May 14, 1974. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,168,465. Tapered Hole Capacitive Probe. Filed Dec. 15, 1977. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,168,532. Multimode Data Distribution and Control Apparatus. Filed Feb. 24, 1977. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,169,267. Broadband Helical Antennas. Filed June 19, 1978. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,169,268. Metallic Grating Spatial Filter for Directional Beam Forming Antenna. Filed May 11, 1978. Patented Sept. 25, 1979. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
National Institutes of Health
Chief, Patent Branch, Westwood Bldg., Bethesda, Md. 20205

Patent application 6-082,056. 7 Alpha-Methylnorethindrone Enanthate and Its Use in Long Term Suppression of Fertility in Female Mammals. Filed Oct. 5, 1979.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Streets NW.,
Washington, D.C. 20240

Patent application 6-060,102. Decomposition of $AlCl_3 \cdot 6H_2O$ in H_2 Atmosphere. Filed July 24, 1979.

Patent 4,164,460. System for the Dielectrophoretic Separation of Particulate and Granular Materials. Filed April 17, 1978. Patented Aug. 14, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents,, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6-063,506. Antisparking Electrodes for Dielectrophoretic Filters. Filed Aug. 3, 1979.

Patent application 6-066,220. Sea Hunt System. Filed Aug. 13, 1979.

Patent application 6-067,646. An Anti-Blooming Shield for Two-Dimensional Charge-Injection Devices. Filed Aug. 17, 1979.

Patent application 6-073,399. Treatment of Body Tissue by Means of Internal Cavity Resonance. Filed Sept. 7, 1979.

Patent application 966,717. Apparatus for Expanding the Memory of a Mini-Computer System. Filed Dec. 5, 1979.

Patent application 931,348. Shaft Decoupling Device. Filed Aug. 7, 1978.

Patent application 944,433. Ejected Roller Shaft Disconnect Mechanism. Filed Sept. 21, 1978.

Patent application 952,169. Rotary Shaft Decoupling Mechanism. Filed Oct. 17, 1978.

Patent application 955,542. Condition Responsive Cable with Bendable Coaxial Sensor Mount. Filed Oct. 27, 1978.

Patent 4,114,137. Directional Sonobuoy. Filed Dec. 19, 1974. Patented Sept. 12, 1978. Not available NTIS.

Patent 4,115,753. Filter Optic Accustic Array. Filed July 18, 1977. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,123,732. Method of Making Tuned Resonance Passive Electronic Filters. Filed Jan. 31, 1977. Patented Oct. 31, 1978. Not available NTIS.

Patent 4,128,300. Optical Logic Elements. Filed Sept. 26, 1977. Patented Dec. 5, 1978. Not available NTIS.

Patent 4,128,759. Fiber Optic Delay Line Filter. Filed Nov. 21, 1977. Patented Dec. 5, 1978. Not available NTIS.

Patent 4,131,444. Method for Increasing the Strength and Density of Lead Titanate Ceramic Bodies. Filed Aug. 25, 1977. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,139,403. Dinitroalkyl and Fluorodinitroalkyl Silicon Compounds. Filed Aug. 19, 1977. Patented Feb. 13, 1979. Not available NTIS.

Patent 4,139,897. Fast Two Dimensional Fourier Transform Device. Filed Mar. 18, 1977. Patented Feb. 13, 1979. Not available NTIS.

Patent 4,140,057. Axisymmetric Stabilized Liner Implosion System. Filed May 2, 1978. Patented Feb. 20, 1979. Not available NTIS.

Patent 4,141,295. Actuation Mine Simulator. Filed Feb. 13, 1978. Patented Feb. 27, 1979. Not available NTIS.

Patent 4,142,145. Method for Determining Conduction-Band Edge and Electron Affinity in Semiconductors. Filed Dec. 22, 1977. Patented Feb. 27, 1979. Not available NTIS.

Patent 4,143,299. Charged-particle Beam Acceleration in a Converging Waveguide. Filed Feb. 22, 1978. Patented Mar. 6, 1979. Not available NTIS.

Patent 4,143,838. Folding Fin Assembly Detent. Filed Aug. 22, 1977. Patented Mar. 13, 1979. Not available NTIS.

Patent 4,144,488. Investigation of Near-Surface Electronic Properties in Semiconductors by Electron Beam Scanning. Filed Dec. 22, 1977. Patented Mar. 13, 1979. Not available NTIS.

Patent 4,144,530. Combined Intrusion Sensor Line. Filed Nov. 17, 1977. Patented Mar. 13, 1979. Not available NTIS.

Patent 4,145,484. Safe High Energy Density Battery. Filed Jan. 23, 1978. Patented Mar. 20, 1979. Not available NTIS.

Patent 4,145,713. Composite Video Signal Field Recognition Circuit. Filed Aug. 29, 1977. Patented Mar. 20, 1979. Not available NTIS.

Patent 4,145,972. Dual-Mode Warhead Initiation System. Filed Dec. 17, 1976. Patented Mar. 27, 1979. Not available NTIS.

Patent 4,146,329. Autoalignment System for High Power Laser. Filed Sept. 14, 1977. Patented Mar. 27, 1979. Not available NTIS.

Patent 4,148,032. Method and Means for Defocusing Engine Cavity Reflected Energy. Filed Oct. 27, 1977. Patented Apr. 3, 1979. Not available NTIS.

Patent 4,149,770. Single-Fiber Duplex Coupler. Filed Nov. 21, 1977. Patented Apr. 17, 1979. Not available NTIS.

Patent 4,150,341. High Input Power Laser Device. Filed Dec. 28, 1976. Patented Apr. 17, 1979. Not available NTIS.

Patent 4,152,934. Vector Measuring Current Meter. Filed Mar. 1, 1978. Patented May 8, 1979. Not available NTIS.

Patent 4,153,368. Electro-Optical Detector Protection Device. Filed Dec. 12, 1977. Patented May 8, 1979. Not available NTIS.

NATIONAL AERONAUTICS & SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters
NASA Code GP-2, Washington, D.C. 20546

Patent application 6-034,529. Diced Tile Thermal Protection for Spacecraft. Filed Apr. 27, 1979.

Patent 4,168,287. Compound Oxidized Styrylphosphine. Filed May 19, 1978. Patented Sept. 18, 1979. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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	Sacramento: California State Library	(916) 322–4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242–7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 5, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloics; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	2-5-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-19-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	8-2-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-12-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	10-25-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-23-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-9-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	9-5-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-12-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers, Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-8-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-15-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-9-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-8-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements, Clutches.	11-28-78

Expiration of patents: The patents within the range of numbers indicated below expire during April 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,083,367 to 3,088,113, inclusive
Plant Patents..... Numbers 2,244 to 2,257, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MAY 6, 1980

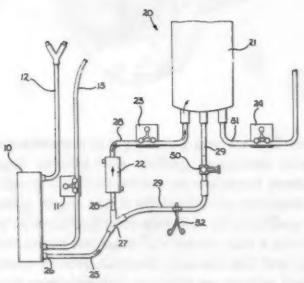
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T994,001
HYPOTHERMIC CARDIOPLEGIA ADMINISTRATION SET

Gerald D. Buckberg, 13238 Riviera Ranch Rd., Los Angeles, Calif. 90049, and Charles W. Dyson, 1734 S. Westgate Ave., Los Angeles, Calif. 90025

Filed Jun. 26, 1978, Ser. No. 918,799
Int. Cl.[2] A61M *5/00*
U.S. Cl. 128—214 R
1 Sheets Drawing. 16 Pages Specification

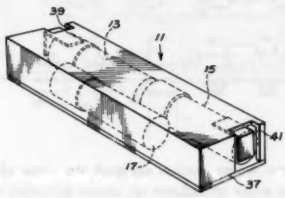


The invention is an improved delivery system for injecting a cardioplegic solution made mostly of a patient's own blood into his heart in order to arrest it. The delivery system is used in combination with a cardiopulmonary bypass apparatus which includes an oxygenator, a roller pump, and typing connecting the patient's heart to the oxygenator so that patient's blood will flow into the oxygenator and the roller pump will pump it out of the oxygenator back into the patient's heart. The delivery system includes a blood bag for storing a portion of the patient's blood, a Y-shaped tubing having a first end with a single opening and a second end with a pair of openings with the single end mechanically coupled to the oxygenator so that the blood will travel from the oxygenator into the Y-shaped tubing, and a heat exchanger disposed between the blood bag and one of the pair of openings of the second end of the Y-shaped tubing and connected thereto so that blood may be pumped from the oxygenator through the heat exchanger into the blood bag by a first small roller pump. The delivery system also includes a stopcock which is connected to the other opening at the second end of the Y-shaped tubing and is also connected to the blood bag so that drugs may be injected into the patient's blood in the blood bag in order to form the cardioplegic solution through the stopcock. A clamping device is used to first clamp off second opening of the Y-shaped tubing and then to clamp off first end thereof. There is also an output tubing and a second small roller pump for pumping the cardioplegic solution into the heart in order to arrest it.

T994,002
BATTERY PACKAGE AND ASSEMBLY

Frederick W. Harvey; Norman E. Hess, and Gurdip S. Sethi, all of 1669 Lake Ave., Rochester, N.Y. 14650

Filed Jun. 11, 1979, Ser. No. 47,397
Int. Cl.[2] H01M *2/24*
U.S. Cl. 429—158
1 Sheets Drawing. 8 Pages Specification



Three cylindrical battery cells are physically disposed in a plastic housing with two of the cells spaced coaxially adjacent one another and the third cell spaced laterally adjacent the coaxial cells spanning the distance between the coaxial cells. An insulating band encircles the end of each cell, between the end cap and a current-collecting sleeve, to prevent shorting between the current collectors. The three cells are connected electrically by conductive elements, such as end caps or straps, that place the third cell in series between the coaxial cells.

T994,003
AZO DYES, AZO DYE-RELEASING COMPOUNDS AND PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING THEM

Kenneth N. Kilminster, Kodak Limited, London, England

Division of Ser. No. 870,314, Jan. 18, 1978, abandoned. This application Sep. 21, 1979, Ser. No. 77,876
Int. Cl.[3] G03C *5/54*
U.S. Cl. 430—242
No Drawing. 81 Pages Specification

Photographic elements, diffusion transfer assemblages and processes are described which employ a novel nondiffusible compound having a novel releasable azo dye. The dyes are azophenols, or precursors of azophenols, and have an electron withdrawing group in one of the positions ortho to the phenolic hydroxy group and a carbamoyl electron withdrawing group in the other position ortho to the phenolic hydroxy group.

T994,004
PROCESS FOR THE PREPARATION OF DIPHENYLMETHANE DICARBAMATES AND POLYMETHYLENE POLYPHENYL CARBAMATES USING SOLID ACID CATALYSTS

Edward T. Shawl, 208 Martroy La., Wallingford, Pa. 19086

Continuation of Ser. No. 8,307, Feb. 1, 1979, abandoned. This application Aug. 23, 1979, Ser. No. 69,005
Int. Cl.[3] C07C *125/07*
U.S. Cl. 560—25
No Drawing. 19 Pages Specification

Diphenylmethane dicarbamates and polymethylene polyphenyl carbamate homologs and derivatives of these compounds are produced by the condensation of N-aryl carbamic acid esters, such as ethylphenylcarbamate, with formaldehyde, para-formaldehyde or trioxane in the presence of strongly acidic sulfonated aromatic ion exchange resins or perfluoroalkane sulfonic acid resins, at temperatures of from ambient to about 150° C. and optionally in the presence of an inert solvent.

DEFENSIVE PUBLICATIONS

PUBLISHED MAY 6, 1980

REISSUES

MAY 6, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

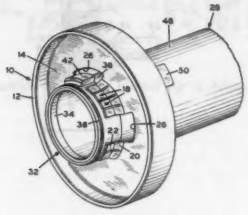
Re. 30,265
PRESIZING DISC WITH SELF-LOCKING MEANS

Vytautas Kupcikevicius, Chicago, and Anton L. Mika, Downers Grove, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Original No. 4,034,441, dated Jul. 12, 1977, Ser. No. 635,275, Nov. 26, 1975. Application for reissue Sep. 1, 1978, Ser. No. 939,136

Int. Cl.[2] A22C *13/00*

U.S. Cl. 17—41 **33 Claims**



1. An improvement in a presizing disc for a shirred tubular casing length utilized in a stuffing apparatus, wherein said presizing disc is confined within an unshirred portion of said tubular casing length and is adapted to be mounted on a support sleeve of a stuffing horn assembly of a stuffing apparatus, said support sleeve having a first barrier and a second barrier and an annular groove disposed adjacent said first barrier, and wherein said presizing disc includes an annular casing length contacting portion and a wall support which is integrally associated with said contacting portion and extends inwardly therefrom to a terminal end portion of said wall support to thereby define an annulus adapted to mount said presizing disc onto said support sleeve, the improvement comprising self-locking means disposed on said terminal end portion of said wall support, said self-locking means including a resilient member integrally associated with said terminal end portion which is adapted to be urged outwardly away from the central axis of said presizing disc upon being advanced over said first barrier of said support sleeve and to resume its original configuration when confined in self-locking engagement on said sleeve in said annular groove disposed adjacent said first barrier, and being further adapted to be permanently deformed in a manner such as to clear said first barrier upon removal of said disc from said support sleeve.

Re. 30,266
ANIMAL DRYER

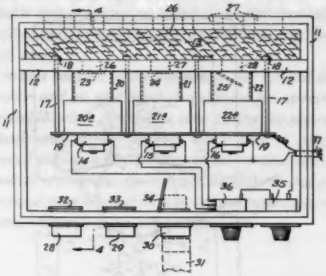
Edwin R. Greene, and Rodney F. Greene, both of 1634 Michael Dr., Pinole, Calif. 94564

Original No. 4,044,474, dated Aug. 30, 1977, Ser. No. 712,057, Aug. 6, 1976. Application for reissue May 11, 1978, Ser. No. 904,940

Int. Cl.[2] F26B *19/00*

U.S. Cl. 34—86 **9 Claims**

8. A hair dryer comprising a substantially airtight compartment, means for admitting surrounding air to said compartment, a partition having a plurality of openings for directing the air to said compartment, a plurality of valves in said openings for selectively permitting the air to leave said openings, a plurality of motors each having an air inlet connected to one of said openings, fans driven by the motors to blow the air past the motors and to thereby warm the air from the heat of the motors, means for



collecting the warm air from the motors, and means for attachment to the collecting means for conducting warm air to a user.

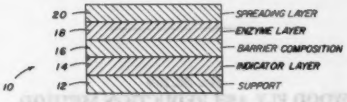
Re. 30,267
MULTILAYER ANALYTICAL ELEMENT

Barbara J. Bruschi, Olathe, Kans., assignor to Eastman Kodak Company, Rochester, N.Y.

Original No. 4,066,403, dated Jan. 3, 1978, Ser. No. 688,446, May 20, 1976. Continuation-in-part of Ser. No. 588,755, Jun. 20, 1975, abandoned. Application for reissue May 18, 1978, Ser. No. 907,362

Int. Cl.[2] G01N *33/16, 31/22*

U.S. Cl. 23—230 B **52 Claims**



51. In an integral element useful in the analysis of a fluid sample for a predetermined analyte, the element including

1. a reagent capable of producing ammonia vapor from the fluid sample; and

2. a reagent capable of interacting with said ammonia to provide a detectable change;

the improvement comprising

a barrier composition separating substantially all of said reagent (1) from said reagent (2), said barrier composition being substantially uniformly permeable to said ammonia and substantially impermeable to interferants.

Re. 30,268
HYDRODYNAMICALLY LOADED WEB PRESS WITH SLIPPER BEARING SHOES

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Original No. 3,783,097, dated Jan. 1, 1974, Ser. No. 258,103, May 30, 1972. Application for reissue Sep. 16, 1977, Ser. No. 833,808

Int. Cl.[2] D21F *3/04, 3/06*

U.S. Cl. 162—360 R **20 Claims**

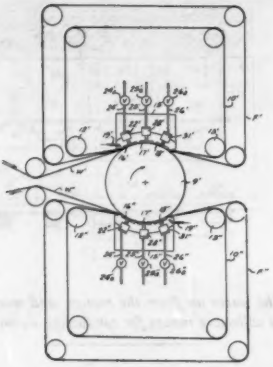
10. A press mechanism for removing liquid from a traveling fibrous web comprising in combination,

a press nip formed between first and second members for receiving a traveling fibrous web therebetween,

one of said members being a traveling flexible impervious belt,

the other of said members being a cylindrical roll with the belt wrapped over an arc of the roll,

force means engaging the outer surface of said belt including a sliding shoe having a concave surface *along the full length of the shoe so that a dewatering pressure extends along*



the full length of the concave surface, said surface being of substantially the radius of said roll extending transversely and also in the direction of belt travel with means for pressing the shoe toward the belt,

means supporting said shoe accommodating movement of the shoe about an axis parallel to the axis of the roll,

means for providing lubrication between the shoe and the belt,

and means for receiving liquid pressed from the web between the roll and belt.

Re. 30,269

WOOD FLY ASH REDUCTION METHOD

Erwin C. Betz, 525 Mill Valley Rd., Palatine, Ill. 60067

Original No. 3,978,197, dated Aug. 31, 1976, Ser. No. 607,469, Aug. 25, 1975. Application for reissue Jul. 3, 1978, Ser. No. 921,363

Int. Cl.[2] **C01B** *33/32*

U.S. Cl. 423—332 **12 Claims**

1. A method for reducing the potassium oxide content of the wood fly ash contained in the combustion products generated by the burning of wood particles, which comprises:

mixing with the wood particles, an alkali metal silicate having a melting point below 1200° C., a secondary alkali metal compound having a melting point below 1200° C., and silica;

burning the mixture; and

withdrawing a stable potassium oxide containing silicate product having a melting point below 1200° C. from the combustion products as a molten slag;

wherein the alkali metal silicate, the secondary alkali metal compound, and the silica are present in amounts effective to form the stable silica product in the presence of wood particles containing potassium oxide;

wherein the secondary alkali compound has a melting point not greater than the melting point of the stable silicate product; and wherein the mixture is kept deficient in alkali metal silicate *product* in order to withdraw the potassium oxide from the wood fly ash.

Re. 30,270

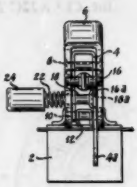
OFF LOCKING IN-LINE TRIGGER SWITCH

Earl T. Piber, Oconomowoc, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Original No. 3,872,274, dated Mar. 18, 1975, Ser. No. 448,413, Mar. 5, 1974. Division of Ser. No. 316,343, Dec. 18, 1972, Pat. No. 3,829,645. Application for reissue Oct. 26, 1978, Ser. No. 955,208

Int. Cl.[2] **H01H** *3/20*

U.S. Cl. 200—157 **1 Claim**



1. A self-enclosed trigger switch for a portable electric tool affording intended operation of the tool but automatically locking it against accidental operation whenever the switch is released comprising:

an insulating housing for the switch mechanism;

a trigger mounted to said housing for limited reciprocal sliding movement between an "on" position wherein the switch is in operation and an "off" position wherein the switch is not in operation;

a frame mounting said trigger to the top of said housing;

a return spring normally biasing said trigger into its extended "off" position and being depressible into its "on" position;

and an automatically engaging off lock for said trigger comprising:

a locking recess in the left side of said trigger having a keyhole shaped first depth forming a locking slot and a larger second depth forming a clearance slot for release of the lock;

a spring-biased locking pin mounted on the left side of said frame for limited axial movement with the right end thereof extending into said recess and the left end thereof having a pushbutton that is accessible for depression by the right hand thumb of the user;

a symmetrical enlarged locking head on said right end of said locking pin disposed within said recess;

said recess having an opening extending up to the top of the trigger affording access for said enlarged locking head on assembly of the trigger switch;

said locking slot being keyhole shaped so as to have a narrow section just wide enough to receive the stem of said locking pin but not the enlarged head thereof and a wider mouth portion at the entrance to said narrow section for receiving said enlarged head whereby said enlarged head abuts both sides of [side] *said* mouth to lock said trigger in its "off" position and said locking pin *pushbutton must be depressed against the force of its bias* spring to move the stem of said pin adjacent the narrow section of said locking slot and said enlarged head into said clearance slot to allow movement of said trigger to "on" position;

and the part of said trigger defining the upper side of said locking slot being at least partly confined against said frame to strengthen said off lock.

Re. 30,271

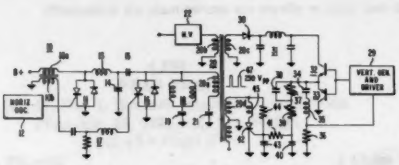
SIDE PINCUSHION CORRECTION SYSTEM

Wolfgang F. W. Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Original No. 3,962,602, dated Jun. 8, 1976, Ser. No. 510,096, Sep. 27, 1974. Application for reissue Apr. 17, 1978, Ser. No. 897,299

Int. Cl.[2] H01J *29/70*

U.S. Cl. 315—370 31 Claims



27. A pincushion correction circuit for a kinescope deflection apparatus including horizontal and vertical deflection generator systems, comprising:

a horizontal deflection winding coupled to the horizontal deflection generator system for accepting scanning current therefrom;

an impedance circuit including an inductor;

first coupling means for coupling said impedance circuit with said deflection winding;

controllable switch means including a control electrode and a controlled current path serially coupled with said impedance circuit; and

control means coupled to the horizontal and vertical deflection generator and to said control electrode for operating said controllable switch means at a time during the second half of the horizontal retrace interval which time is progressively advanced during a first portion of the vertical scan interval and which is progressively retarded during a second portion of the vertical scan interval for altering said scanning current in a manner to reduce pincushion distortion.

PLANT PATENTS

GRANTED MAY 6, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,530

PEAR TREE

Glen E. Handy, Rte. 2, Box 347, Troutdale, Oreg. 97060

Filed Apr. 24, 1978, Ser. No. 899,691

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of flowering pear tree substantially as herein shown and described, characterized particularly as to novelty by a globe shaped form which is normally apparent when the tree is two to three years old, a vigorous rate of growth, thornless branched, waxy foliage, which turns consistently a red to red-purple color in the fall, profuse blooms which begin appearing when the tree is extremely young, and sparse fruit production.

4,531

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Gantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 27, 1978, Ser. No. 963,853

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat. plant known by the name Lancer and particularly characterized as to uniqueness by the combined characteristis of flat capitulum form, spooned daisy capitulum type, dark lavender pink ray floret color, diameter across face of capitulum up to 100 mm., tall plant height, semi-spreading branching pattern, average natural season flowering date of September 22 and average flowering response period of seven weeks in photoperiodic controlled short day programs.

4,532

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 2,051

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African Violet, as described and illustrated, known by the cultivar name Boston and characterized by the combined features of strong upright stems carrying intensive pink flowers having frilled edges; compact and vigorous growth habit, and by its leaves which are cupped to form a flat funnel, with the leaves having serrated edges and light green centers.

4,533

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Isselburg, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 2,052

Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African Violet, as described and illustrated, referred to by the cultivar name Nashville and particularly characterized by the combined features of compact and vigorous growth habits; red-purple, frilled, non-dropping flowers; strong and upright stems; relatively quick salability due to its vigorous growth habit, and by its generally funnel-shaped leaves having light-green centers.

PLANT PATENTS

ORANGE, NO. 4, 1970

Published by the Patent Office, Washington, D.C.

PATENTS

GRANTED MAY 6, 1980

ERRATA

For CLASS	See PATENT NO.
433–007	4,200,979
433–008	4,200,980
433–060	4,200,981
368–073	4,201,038
368–241	4,201,039
368–035	4,201,040
368–085	4,201,041
368–170	4,201,042
368–010	4,201,043
083–355	4,201,112
074–594.2	4,201,120
124–023 R	4,201,177
181–173	4,201,230
162–162	4,201,264
273–073 F	4,201,381
282–027.5	4,201,404
430–222	4,201,578
430–323	4,201,579
430–319	4,201,580
430–396	4,201,581
430–351	4,201,582
430–097	4,201,583
430–389	4,201,584
430–376	4,201,585
430–621	4,201,586
430–224	4,201,587
430–167	4,201,588
430–139	4,201,589
430–617	4,201,590
430–619	4,201,591
430–114	4,201,685
424–078	4,201,706
264–157	4,201,711
546–041	4,201,713
568–413	4,201,726
568–442	4,201,727
568–454	4,201,728
585–730	4,201,730
585–361	4,201,731
525–363	4,201,732
428–212	4,201,777
430–005	4,201,800
525–398	4,201,857
544–277	4,201,860
375–053	4,201,884
375–106	4,201,885

ERRATA—Continued

For CLASS	See PATENT NO.
370–068	4,201,889
370–068	4,201,890
370–058	4,201,891
370–104	4,201,892
370–058	4,201,893
370–058	4,201,894
455–608	4,201,909
375–017	4,201,942
455–185	4,201,943
455–155	4,201,944
455–183	4,201,945
367–095	4,201,971
367–040	4,201,972
371–050	4,201,976

PATENTS

GRANTED MAY 6, 1980

GENERAL AND MECHANICAL

4,200,937

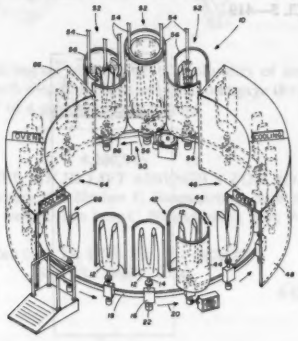
METHOD OF MANUFACTURING GARMENTS

Joseph W. A. Off, Irving, and Judson H. Early, Dallas, both of Tex., assignors to Hagger Company, Dallas, Tex.

Continuation of Ser. No. 849,769, Nov. 9, 1977, Pat. No. 4,145,388. This application Dec. 21, 1978, Ser. No. 971,709

Int. Cl.[2] A41D *1/06, 13/00;* B32B *5/04, 5/14*

U.S. Cl. 2—227 **3 Claims**



1. A garment, comprising:

a nonwoven mass formed in the shape of the desired garment;

said mass including a plurality of fiber layers formed by depositing activatable fibers over a mold member corresponding to the desired garment, orienting at least some of the fibers constituting at least one of the fiber layers in accordance with the elasticity requirements of corresponding portions of the garment, and activating the fiber layers to bond the nonwoven mass into the garment.

4,200,938

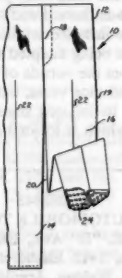
ADJUSTABLE PANT LEG SYSTEM

Thomas R. LeTourneau, 820 Brook St., Elgin, Ill. 60120

Filed Oct. 25, 1977, Ser. No. 844,604

Int. Cl.[2] A41D *27/10*

U.S. Cl. 2—269 **8 Claims**



1. An adjustable pant leg system comprising:

trousers having a pair of legs;

a strip provided with first interengageable means applied to the inside of each trouser leg adjacent the lower edge extremity of each trouser leg and disposed generally symmetrically about the vertical axis of each leg;

second interengageable means applied without stitching or seams to the inside of each trouser leg adjacent the first interengageable means and extending vertically upwardly therefrom inside of each trouser leg;

orientation means on the interengageable means for positioning without stitching or seams the interengageable means in pre-selected orientation with respect to the vertical axis of each trouser leg;

calibration means on the second interengageable means disposed without stitching or seams in pre-selected relationship with the axis of each trouser leg when disposed in selected orientation therewith;

the calibration means including plural measuring indicia disposed in pre-arranged relationship with the vertical axes of the respective trouser legs to facilitate precise repeated and selective adjustment of trouser leg length without stitching or seams by engaging the interengageable means of the strip in selected relationship with the calibration means to provide a seamless system for extending or shortening trouser legs.

4,200,939

METHOD FOR FIXATION OF PROSTHESES TO BONE

Zale Oser, Bound Brook, N.J., assignor to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Oct. 19, 1977, Ser. No. 843,754

Int. Cl.[2] A61F *1/00*

U.S. Cl. 3—1.9 **4 Claims**

1. In a method for securing an artificial prothesis within a bone member wherein the prosthesis is inserted into a cavity in the bone member and permanently secured therein with a void filling, cementitious composition, the improvement comprising filling the void space around the prosthesis within the cavity of the bone member with said cementitious composition consisting essentially of a formable, thermoplastic polymer at a temperature in the range of 45° to 75° C. and thereafter allowing the polymer to cool to a hard, rigid solid at body temperature whereby the prosthesis is firmly secured within said bone member.

4,200,940

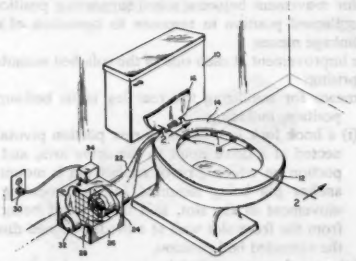
TOILET SEAT VOLATILE GAS INCINERATOR

Wes Buchanan, 2703 Pine Ave., Manhattan Beach, Calif. 90266

Filed Nov. 13, 1978, Ser. No. 960,463

Int. Cl.[2] E03D *9/05*

U.S. Cl. 4—348 **4 Claims**



1. A system for removing odorous volatile body gases associated with the use of a toilet stool comprising:

a hollow toilet seat having an annular opening and a plurality of radial openings for providing an air passageway between said annular openings and said hollow toilet seat,

an incinerator device comprising electrical discharge cir-

cuits in the air passageway for igniting and burning odorous volatile body gases,

said electrical discharge circuits consist of a plurality of screen wire located orthogonally and insulated from each other to form a grid,

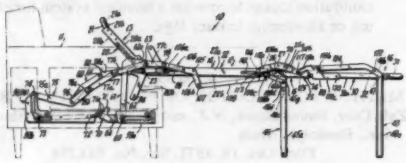
a vacuum device connected by a conduit with said hollow toilet seat and said incinerator device for drawing air from said annular opening through said radial openings through said hollow toilet seat and through said incinerating device whereby the odorous volatile gases are burned and the odor-free by-products in question are discharged into the atmosphere.

4,200,941

PULL-OUT SOFA BED AND HARDWARE THEREFOR

Glenn G. Gill, Bayonne, N.J., and Izchak Cycowicz, Brooklyn, N.Y., assignors to Mohasco Corporation, Amsterdam, N.Y.

Filed Apr. 6, 1978, Ser. No. 894,194
Int. Cl.[2] A47C *17/14*
U.S. Cl. 5—13 **5 Claims**



1. In a folding sofa-bed assembly of the type including at each side thereof:

(A) a primary body frame section having a longitudinally-extending slot bounded by a front slot wall and a rear slot wall;

(B) a secondary body frame section pivotally connecting its rear end region with the front end region of the primary section;

(C) a front foot section pivotally connecting its rear end region with the front end region of the secondary section;

(D) rear linkage folding means for moving the sections between an end-limiting collapsed sofa position, in which the foot section generally overlies at least a part of the primary section, and an end-limiting extended bed position, in which the foot section generally lies in a generally horizontal plane with the secondary section and with the primary section part,

said rear linkage means having a drive arm pivotally mounted on one of the frame sections; and

(E) a rear leg pivotally mounted on one of the frame sections for movement between a bed-supporting position and a collapsed position in response to operation of the rear linkage means;

the improvement at each side of the sofa-bed assembly comprising:

means for stabilizing the rear leg in its bed-supporting position, including

(i) a hook lock link having a rear portion pivotally connected at a drive point to the drive arm, and a front portion on which a pivot anchor pin is mounted, said anchor pin being mounted for reciprocating sliding movement in the slot, said drive point being spaced from the front slot wall at a predetermined distance in the extended bed position,

(ii) a rear leg support link having one end region pivotally mounted on said pin, and its opposite end region pivotally connected to the rear leg, and

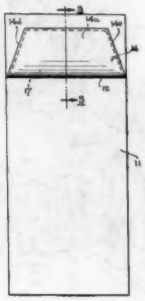
(iii) said hook lock link having an oversized length greater than said predetermined distance such that the anchor pin is forwardly urged into tight frictional jamming engagement with the front slot wall in the extended bed position, said anchor pin being fixedly anchored under tension by the oversized hook lock link at the front slot wall in the extended bed position to thereby fixedly anchor the rear leg support link and in turn the rear leg, whereby the rear leg is reliably supported in its bed-supporting position without excessive wobble.

4,200,942

TOWEL HAVING INFLATABLE PILLOW INCORPORATED THEREIN

Marianna Case, 4308 Via Marina, No. B, Marina Del Rey, Calif. 90291

Filed Oct. 30, 1978, Ser. No. 955,656
Int. Cl.[2] B32B *1/06, 3/02*
U.S. Cl. 5—419 **4 Claims**



1. A towel device having a pillow incorporated therein comprising:

an elongated main body portion fabricated of a washable, moisture-absorbent material,

a flap member attached to said main body portion solely along a seam line running across said main body portion at a position spaced between a pair of opposite ends thereof and towards one of said ends, said flap member having side, top and bottom wall portions which are joined together to form a compartment, a slit being formed in the bottom wall portion, said main body portion extending in opposite directions from said seam line separate and apart from said flap member whereby said flap member is adapted to be alternatively positioned with the bottom wall portion thereof abutting against a part of the main body portion between said one of said ends thereof and said seam line or the top wall portion thereof abutting against a part of the main body portion between the other of said pair of ends thereof and said seam line, and

an inflatable pillow installed within said compartment, said compartment slit being adapted to pass said pillow in its deflated state from the outside of said compartment to the inside thereof and vice versa, but not to pass said pillow therethrough in its inflated state, said pillow having an inflation valve which is located along said compartment slit.

4,200,943

AUTOMOBILE TOOL

Eli C. Fredin, 402 SE. "D" Ave., Gilmore City, Iowa 50541; James W. Morgan, 1412 Elmhurst Ave., Humboldt, Iowa 50548, and Milo H. Waimer, Arnolds Parks, Iowa 51331

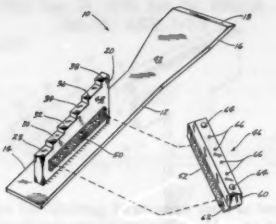
Filed Oct. 30, 1978, Ser. No. 955,939
Int. Cl.[2] B25F *1/00*
U.S. Cl. 7—100 **6 Claims**

1. An automobile tool device comprising,

an elongated support element having forward and rearward ends, said forward end having a beveled edge adapted for removing ice from a windshield, and

a jam means to hold the operating lever of a gasoline pump

handle in an operating condition, said jam means being associated with said support element and comprising a



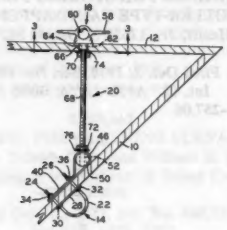
member having an upper edge of a plurality of stepped surfaces, each of said surfaces adapted to engage the operating lever of a gasoline pump handle.

4,200,944

BOW OR KEEL SOLID LIFT ASSEMBLY FOR BOATS

Herman L. Gillespie, and Harlow E. Baumgartner, both of Fort Wayne, Ind., assignors to Lois C. Baumgartner, Fort Wayne, Ind.

Filed Oct. 25, 1977, Ser. No. 845,029
Int. Cl.² B63B *21/00*
U.S. Cl. 9—1.1 **6 Claims**



1. A lift assembly for boats comprising: a rigid strap mounted to the bow of a boat and having an arcuate closed loop portion with a slot in said loop portion extending in the arcuate direction, a cylindrical nut rotatably received in the closed loop portion of said strap, said nut having an internally threaded bore aligned with said slot, a rigid rod passing through said slot with one end of said rod being threaded into said bore, a lifting eye mounted to the deck of said boat, the other end of said rod being connected to said lifting eye, and a generally U-shaped eye member extending through the bow of the boat and being connected to said strap.

4,200,945

BOOK AND HANGING DEVICE

Leslie E. Ellis, P.O. Box 52298, Jacksonville, Fla. 32201

Filed Aug. 24, 1978, Ser. No. 936,515
Int. Cl.² B42C *1/00*
U.S. Cl. 11—1 ET **20 Claims**

1. A method of making a book and hanging device which is attached to said book and projects beyond the top edge thereof comprising the steps of:

assembling a plurality of leaves in proper order and orientation for binding; and

binding a cover having front and rear cover portions to said leaves along a binding edge, each of said cover portions comprising a hanging tab projecting beyond said top edge, and having perforations formed therein which extend along said top edge.

20. A method of making a book having a bound edge, a top edge, an open side edge and a bottom edge, and a hanging device attached thereto and projecting beyond said top edge, comprising the steps of:

assembling a plurality of signatures in proper order and orientation for binding;

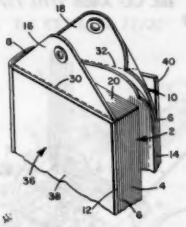
binding a first cover to said signatures along said bound edge;

trimming said first cover and said signatures along said top, side and bottom edges to open said signatures into leaves and obtain straight edges;

laminating a second cover, larger than said first cover, to said first cover;

trimming said second cover along said side and bottom edges;

perforating said second cover along said top edge;



die cutting the portion of said second cover which projects beyond said top edge in the general shape of a portion of an oval, whereby any adhesive which may have escaped from said bound edge at its top end is removed along with the adjacent projecting strip of said second cover, and said portion of said second cover which projects beyond said top edge is cut into two separate, parallel, opposed hanging tabs;

punching a hole in each of said hanging tabs near the top center thereof; and

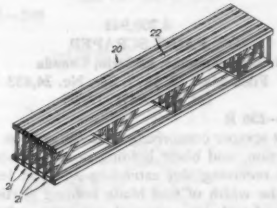
reinforcing each of said holes with an eyelet, whereby said book may be suspended upright in a closed position on a peg or other support received in said eyeleted holes, and said hanging tabs may be readily manually removed by tearing along said perforations when no longer needed.

4,200,946

LOAD-SUPPORTING STRUCTURES

Derek I. Lawrence, Crewkerne, England, assignor to Westland Aircraft Limited, Yeovil, England

Filed Nov. 16, 1978, Ser. No. 961,204
Int. Cl.² E01D *9/00*
U.S. Cl. 14—4 **27 Claims**



1. A load supporting structure comprising a plurality of similar longitudinally extending truss members, each said truss member having upper and lower spaced-apart chords and intermediate joining members, wherein said upper and lower chords and said joining members are constructed of tubular material having a rectangular cross-section, said rectangular

joining members of each truss being located in a nominal plane parallel and to one side of the upper and lower chords of that truss and so that one of the side surfaces of the joining members overlap one of the side surfaces of the chords and are attached thereto, said plurality of truss members arranged in side-by-side relationship so that the other one of the side surfaces of the upper and lower chords of a truss member overlap the other one of the side surfaces of the joining members of an adjacent truss member, fixedly attaching said plurality of adjacent members to each other so as to form the load supporting structure.

4,200,947

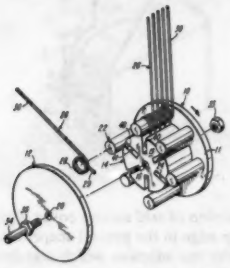
ROTARY STRIPPER DEVICE

Frank F. Ali, 2973 Pascal Dr., Fairborn, Ohio 45324

Filed Jan. 23, 1978, Ser. No. 871,507

Int. Cl.[2] A46B *7/10, 13/00*

U.S. Cl. 15—198 **15 Claims**



1. A rotary stripper device comprising a hub assembly, a plurality of stripper elements projecting peripherally of said hub assembly and in circumferentially spaced relation thereto, said hub assembly including as one part thereof means mounting said stripper elements in connection therewith and to have end portions project generally radially outwardly therefrom, the connections being formed to accommodate a floating movement of said stripper elements and the projected outer ends thereof in a sense generally longitudinally of said hub assembly, said hub assembly including as another part thereof means defining opposed surfaces for receiving and containing therebetween and serving as a guide for inner end portions of said stripper elements accommodating and maintaining their floating movement in a controlled path and in a sense generally longitudinally of said hub assembly on rotation of said mounting means and application thereof to a surface to be worked, said another part of said hub assembly being spaced radially inward from said one part thereof, the arrangement precluding interference between or misalignment of said stripper elements and their projected ends.

4,200,948

PAINT SCRAPER

Arthur E. Nesseth, Komoka, Ontario, Canada

Filed Mar. 28, 1979, Ser. No. 24,633

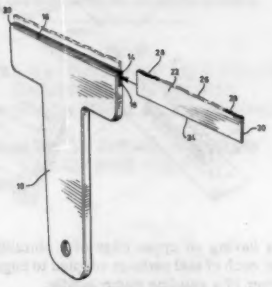
Int. Cl.[2] A47L *17/06*

U.S. Cl. 15—236 R **5 Claims**

1. A paint scraper comprising a handle portion and a blade holding portion, said blade holding portion having an elongated blade receiving slot extending along at least a major portion of the width of said blade holding portion, with an open mouth of said slot presented along the end of the blade holding portion;

a scraper blade having a first scraping edge of straight, generally smooth configuration, and a second, opposed scraping edge of toothed, serrated configuration;

said scraper blade being adapted to be releasably received in said slot in a first position in which the first scraping edge of said blade protrudes beyond the mouth of said slot and beyond the end of the blade holding portion, and in a second position in which the second scraping edge of said



blade protrudes beyond the mouth of said slot and beyond the end of the blade holding portion.

4,200,949

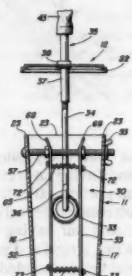
CONTAINER FOR STORING PAINT AND A ROLLER-TYPE PAINT APPLICATOR

William V. Heniff, Jr., 12632 S. Harold St., Palos Heights, Ill. 60463

Filed Oct. 2, 1978, Ser. No. 947,496

Int. Cl.[2] A47L *13/56;* **B08B** *3/00*

U.S. Cl. 15—257.06 **11 Claims**



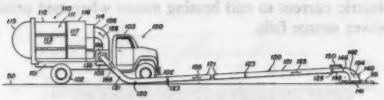
1. A container for receiving a quantity of paint and for storing a roller-type paint applicator therein so that the applicator is at all times ready for use, said container comprising a receptacle portion having a bottom wall, upstanding side wall means, and an open upper end, said receptacle portion being adapted to receive a quantity of paint, a removable cover for closing the open end of said receptacle portion, and combined support and wiping means in said receptacle portion for engaging the roller of a roller-type paint applicator and holding said roller in a fixed position above the level of the paint in said receptacle portion, said support and wiping means also being operable to wipe excess paint from the roller of said applicator as the latter is shifted while the roller is engaged with said support and wiping means, the cover of said container preventing paint is said receptacle portion and in the roller of said applicator from hardening when said applicator is positioned in said receptacle portion and said cover is engaged with the open end of said receptacle portion.

4,200,950

LARGE AREA CLEANING SYSTEM

Roger D. Coverley, 11 Eastcliff Dr., Joliet, Ill. 60436

Filed Apr. 21, 1978, Ser. No. 898,636
Int. Cl.[2] A47L 9/00
U.S. Cl. 15—314 7 Claims



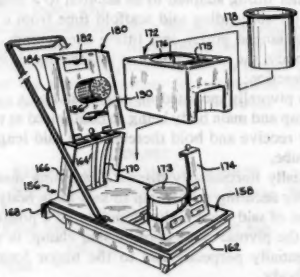
1. A system for cleaning large areas such as baseball parks and football stadiums and picnic areas and zoos, comprising a portable chassis, a refuse compactor mounted on said chassis for packing refuse into a small volume therein, a blower mounted on said chassis and constructed and arranged to draw air and entrained refuse into an inlet for said blower and to blow the refuse from said blower into said compactor, a substantial length of flexible hose having one end thereof connected to the inlet to said blower and a pickup nozzle connected to the other end of said hose, said pickup nozzle having an inlet end with an opening therein substantially greater in area than the internal area of said hose, said blower creating a stream of air entering the inlet end of said nozzle and carrying refuse therewith and along said hose and through said blower and into said compactor thereby rapidly to clean refuse from large areas and to compact the refuse into a small volume in said compactor, a hose support member including a sleeve for supporting and receiving said hose therethrough for sliding motion with respect thereto, and a clamp for mounting said sleeve upon the railing of an upper deck to assist in holding said hose during cleaning of the upper deck.

4,200,951

MACHINE FOR CLEANING SURFACES

Jack L. Burgoon, Toledo, Ohio, and William R. Smith, Beaver Dam, N.Y., assignors to The Scott & Fetzer Company, Lakewood, Ohio

Filed Oct. 11, 1977, Ser. No. 840,735
Int. Cl.[2] A47L 7/00
U.S. Cl. 15—321 12 Claims



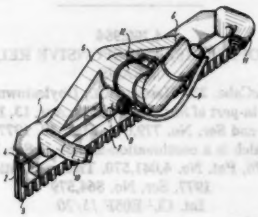
1. A surface cleaning machine comprising a frame, a recovery container supported on said frame for receiving cleaning solution from a surface being cleaned, means for establishing a vacuum in said recovery container, a supply container supported on said frame for containing cleaning solution, means for supplying cleaning solution from said supply container to the surface, a rotatable brush rotatably supported from said frame, means supported from said frame for rotating said brush, a rear squeegee and a nozzle carried by said frame for movement toward and away from the surface, wheel means supporting part of said frame on the surface, a forward nozzle carried by said frame in front of said brush, and passage means for alternately connecting said rear nozzle and said forward nozzle with said recovery container, said recovery container being located in said supply container, a lid carried by said machine, said means for establishing a vacuum comprising a vacuum blower carried by said lid and having an inlet positioned to extend into said recovery container when said lid is closed over said containers.

4,200,952

DEVICE FOR CLEANING FLOORS BY MEANS OF A LIQUID

Jan F. Smies, Amsterdam, and Leo Dijkmans, Haarlem, both of Netherlands, assignors to Cemsto B.V., Amsterdam, Netherlands

Filed Nov. 7, 1978, Ser. No. 958,497
Claims priority, application Netherlands, Nov. 15, 1977, 7712580
Int. Cl.[2] A47L 11/20
U.S. Cl. 15—322 4 Claims



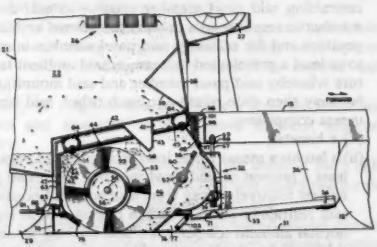
1. Device for cleaning floors with the aid of a liquid, said device comprising a tube, said tube at its one end being in communication with a suction device and at its other end opening into an elongated suction mouth-piece, and a conduit, which at its one end is in communication with the source of a cleansing fluid under pressure and at its other end is in communication with at least one spray nozzle, said nozzle being mounted at a fixed position above the suction port of the suction mouth-piece and being directed towards a point lying beyond one of the long sides of the suction mouth-piece, characterized in that two spray nozzles are mounted adjacent the small sides of the suction mouth-piece, said spray nozzles being directed to each other obliquely inwardly.

4,200,953

SURFACE SWEEPER WITH FLOATING BROOM CHAMBER

Billy J. Overton, Laquinta, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 5, 1978, Ser. No. 948,846
Int. Cl.[2] A47L 5/30
U.S. Cl. 15—349 13 Claims



10. A mobile sweeper for cleaning an underlying surface and having a framework and a hopper mounted on the framework

to receive dust and debris through an inlet aperture therein, a floating broom chamber having an outlet aperture, means for mounting said floating broom chamber on said framework with said outlet aperture in registration with the inlet aperture of the hopper and for supporting said floating broom chamber in a down position, a broom adapted for contact with the underlying surface, means for mounting said broom for rotation within said floating broom chamber whereby dust and debris is swept off of the surface into said floating broom chamber, said last named means providing limited vertical movement between said broom and said floating broom chamber, means for urging the swept dust and debris from said floating broom chamber through said outlet and inlet apertures into the hopper, a resilient tubular seal disposed between the hopper and said floating broom chamber surrounding both said outlet and inlet apertures, said tubular seal being transversely collapsible, whereby said floating broom chamber may be moved upward from said down position while said broom is retained in contact with the underlying surface so that the surface is swept substantially continuously during operation.

4,200,954

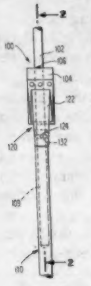
TELESCOPING HEAT RESPONSIVE RELEASING MEANS

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Continuation-in-part of Ser. No. 676,413, Apr. 13, 1976, Pat. No. 4,040,304, and Ser. No. 779,044, Mar. 18, 1977, Pat. No. 4,099,292, which is a continuation-in-part of Ser. No. 676,483, Apr. 13, 1976, Pat. No. 4,041,570. This application Dec. 27, 1977, Ser. No. 864,579

Int. Cl.[2] E05F *15/20*

U.S. Cl. 16—48.5 **10 Claims**



10. A heat responsive releasing device, comprising:

(a) a mounting member;

(b) a pawl member which slidably engages said mounting member, and tracks relatively along said mounting member between at least restrained and activated positions defined along said mounting member;

(c) bimetallic means mounted on said mounting member for restraining said pawl member relative to said mounting member in response to a preselected normal ambient temperature and for releasing said pawl member in response to at least a preselected increase in said ambient temperature whereby said pawl member and said mounting member may then slide relative to each other, said bimetallic means comprising:

(i) a bimetal;

(ii) a latching means for at least receiving and engaging at least a portion of said pawl member when said pawl is moved relatively away from said actuated position into said restrained position and in response to at least said normal ambient temperature, said latching means comprising a pin attached to said bimetal; said pin having at least one beveled surface and said pawl having at least one recess to find therein adapted to receive said pin when said pawl is in the restraining position relative to said mounting member and said ambient temperature is said normal temperature;

(d) remotely controlled electric heating means located on said bimetal for heating said bimetal;

(e) primary power source for delivering electric current to said heating means; and

(f) secondary power means for automatically delivering an electric current to said heating means when said primary power source fails.

4,200,955

GIRDER ROLLER FITTINGS

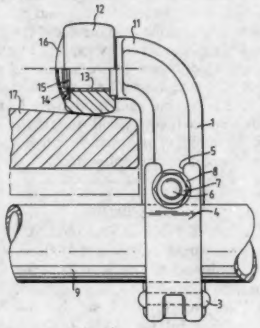
Roger M. Kitchen, Sheffield, and Dennis Braithwaite, Barnsley, both of England, assignors to Deborah Services Limited, Wakefield, England

Filed Sep. 5, 1978, Ser. No. 939,699

Claims priority, application United Kingdom, Sep. 19, 1977, 38959/77

Int. Cl.[2] E05D *13/02*

U.S. Cl. 16—106 **9 Claims**



1. A roller fitting adapted to be secured to a length of scaffold tube for suspending said scaffold tube from a horizontal flange of a flanged girder, said fitting comprising:

a main body, the major length of which extends in the vertical direction;

a clamp pivotally mounted on said main body,

said clamp and main body being so configured as to cooperatively receive and hold therebetween said length of scaffold tube,

substantially horizontally disposed fastening means for releasably securing said clamp to said main body,

a portion of said main body extending, at a position remote from the pivotal connection of said clamp, in a direction substantially perpendicular to the major length of said main body,

said main body and clamp being secured to said scaffold tube at a position adjacent an edge portion of said girder flange such that said portion of said main body overlies the upper surface of said horizontal flange of said flanged girder, and

a roller rotatably mounted on said portion of said main body by means of a bearing and operatively engaged with said upper surface of said horizontal flange of said flanged girder for rotatably suspending said scaffold tube from said girder,

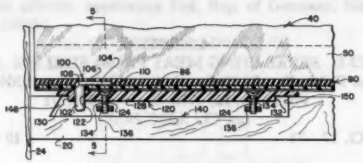
whereby, said fastening means is subjected to substantially zero vertical loading from said scaffold tube and, in the event of failure or break-up of said roller or bearing, said portion of said main body can engage the flange of said girder in a fail-safe manner.

4,200,956

HINGE, HANDLE AND DETENT

Myron E. Ullman, Jr., Canfield, Ohio, assignor to M.M.G., Inc., Youngstown, Ohio

Continuation-in-part of Ser. No. 806,698, Jun. 15, 1977. This application Mar. 31, 1978, Ser. No. 892,332
Int. Cl.[2] E05D 7/04
U.S. Cl. 16—130 35 Claims



1. A system for mounting opposed ends of a door panel between a pair of frame members for pivotal movement of the door panel relative to the frame members, comprising:

(a) a pair of panel-engaging members each having a U-shaped cross section defined by a pair of spaced leg portions interconnected by a base portion and each being configured to receive a separate one of the door panel ends between its leg portions, the leg portions having parts which clampingly engage the door panel end received therebetween without the need for fasteners to penetrate or extend through the panel, the leg portions being of elongate configuration and each having first and second end regions with the first end regions of both legs being interconnected by the associated base portion, and the parts which clampingly engage the door panel end being provided near the second end regions of the legs;

(b) each panel-engaging member cooperating with the panel end received therein to define a substantially U-shaped channel extending between such parts of the panel-engaging member as do not clampingly engage its associated panel end and the door panel end;

(c) a resilient liner positioned in the U-shaped channel intermediate the base portion and that portion of the door panel end opposite the base portion;

(d) a pair of elongate projection means each extending from a separate one of the base portions for defining a pivot axis of the door panel; and,

(e) a pair of projection-receiving means each being provided on a separate one of the frame members for journaling a separate one of the projection means to mount the door panel on the frame members for movement about the pivot axis between open and closed positions.

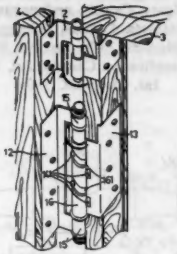
4,200,957

SELF-CLOSING DOOR HINGE

Yun T. Hsu, 30-27, Chun In Rd. Chun In Village, Tong Sun, Hsiang, I Lan Hsien, Taiwan

Filed May 19, 1978, Ser. No. 907,860
Int. Cl.[2] E05F 1/06
U.S. Cl. 16—154 6 Claims

1. A self-closing door hinge arrangement comprising, a main hinge which may be fixed in a middle position of a door and door frame, and two auxiliary hinges respectively fixed on the upper and lower position of said door and frame; said main hinge including a right hinge leaf with sleeve having a plurality of grooves, said grooves having an inclined portion and a horizontal portion and left hinge leaf with pivot, said pivot removably fixedly mounted to said left hinge leaf; said pivot pivotably and vertically movable in said sleeve, and being axially disposed in said sleeve; having a plurality of extended pin rollers each engaging a corresponding one of the grooves on said sleeve; and vertically supporting said pivot and said door such that the pivot and door are raised as each of said pins moves upward along the incline of said groove of said sleeve as said door is opened; and rollers moving identically in said corresponding grooves, said pivot and door falling automatically along the groove to close the door when each of said rollers are in said inclined portion of said grooves and said door is released.

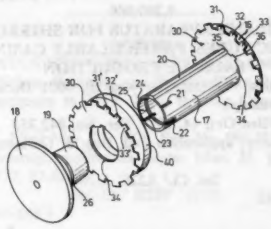


4,200,958

KITCHEN UTENSIL

Vladslav J. Jurida, 370 Ridelle Ave. #303, Toronto, Ontario, Canada (M6B 4B4)

Filed Oct. 19, 1977, Ser. No. 843,635
Claims priority, application Canada, Sep. 20, 1977, 287111
Int. Cl.[2] A22C 9/00
U.S. Cl. 17—29 3 Claims



1. In a machine for tenderizing meat, said machine having a handle member and a spool rotatably mounted by said handle member, the combination comprising:

a plurality of tenderizing blades mounted on said spool, said blades each comprising a plate-like body with spaced apart teeth extending radially therefrom beyond said spool;

a plurality of ring-like spacer elements separate from said blades and mounted on said spool between adjacent blades;

means for orienting and maintaining the teeth of each individual blade in an alternately projecting relationship relative to the teeth of an adjacent blade; and

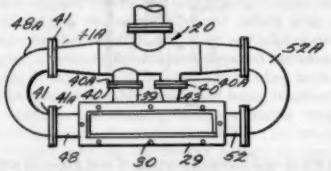
said spool comprises a first section having a first end cap and a first cylinder projecting therefrom and a second section having a second end cap and a second cylinder projecting therefrom, said first cylinder being engaged in said second cylinder.

4,200,959

APPARATUS FOR FORMING BACON PRODUCT ANALOGUES AND THE LIKE

Earl J. Cheney, Calgary, Canada, assignor to Burns Foods Limited of Calgary, Alberta, Canada, Calgary, Canada

Filed Mar. 31, 1978, Ser. No. 892,024
Claims priority, application Canada, Jul. 14, 1976, 256928
Int. Cl.[2] A22C 7/00
U.S. Cl. 17—32 19 Claims



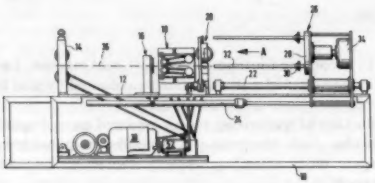
1. Apparatus for forming a multi-component product from combining a first viscous component with a second viscous component comprising:
(a) a housing;
(b) a die means, said die means including a matrix compartment and an injector compartment;
(c) a first manifold for receiving a first viscous component, said first manifold communicating with said housing and said matrix compartment of said die;
(d) a second manifold for receiving a second viscous component, said second manifold communicating with said housing and said injector compartment of said die; and
(e) means for moving said first and said second visous components to said die means for joining said components in said die means in a configuration determined substantially by the configuration of said matrix compartment and said injector compartment of said die means.

4,200,960

METHOD AND APPARATUS FOR SHIRRING OF SYNTHETIC TUBES, PARTICULARLY CASINGS FOR SAUSAGE PRODUCTION

Gunter Kollross, Wallerstadter weg 20, 6081 Dornheim, Fed. Rep. of Germany

Filed Oct. 14, 1977, Ser. No. 842,353
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1976, 2646848
Int. Cl.[2] A22C 13/02
U.S. Cl. 17—42 8 Claims



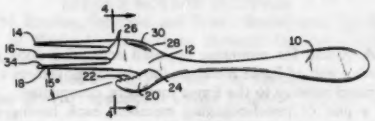
1. A device for the shirring of casings, particularly sausage casings, comprising a guide mandrel over which the casing is fed, first and second rotating shafts having eccentric portions, a shirring head supported on said eccentric portions of said shafts for oscillation thereby during rotation of said shafts, at least two rotatable profile rollers carried on said shearing head having peripheries disposed radially in respect to said guide mandrel at spaced locations around said guide mandrel, means for inflating the casing, means for drawing off the casing from said mandrel, and means for rotating said shafts to cause gyration of said profile rollers around said casing to feed the casing in a spiral shape off said guide mandrel.

4,200,961

SEPARATING MEAT FROM SHELL

Joseph F. Mueller, 56 Holbrook Ave., Hull, Mass. 02045

Filed Feb. 13, 1978, Ser. No. 877,171
Int. Cl.[2] A22C 29/00
U.S. Cl. 17—73 10 Claims



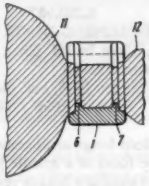
1. a fork comprising a handle,
a midsection formed at the end of said handle,
and tines extending from said midsection,
said tines all being generally in an arcuate plane, said plane defining a common surface, said tines including a plurality of generally parallel tines and an outermost claw tine shorter than said parallel tines, said claw tine being disposed at an angle in said common surface to the other said tines.

4,200,962

U-SHAPED CLIP MADE FROM STRIP MATERIAL

Herbert Niedecker, Am Ellerhang 6, Königstein 2, Fed. Rep. of Germany (6240)

Continuation-in-part of Ser. No. 766,416, Feb. 7, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,717
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1976, 2606658
Int. Cl.[2] B65D 77/12
U.S. Cl. 24—30.5 W 6 Claims



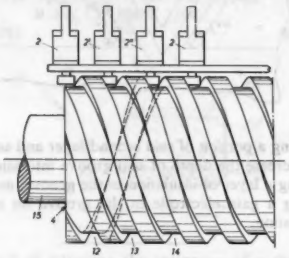
1. In a U-shaped clip made from substantially flat strip material and intended to close bags and flexible tubes, said clip comprising a web connecting two limbs having outwardly angled end lugs, the improvement which comprises providing on the surface of the clip which is to engage a bag a pair of spaced parallel beads extending longitudinally along the outer edges of the web and limbs, the material forming said beads being displaced inwardly from the outer longitudinal edges of the strip, whereby such beads serve to grasp the bag more securely.

4,200,963

MACHINE FOR SIMULTANEOUS BIAXIALLY STRETCHING

Eberhard Kamfe, Wiehl, and Willi Schmidt, Nümbrecht-Elsenroth, both of Fed. Rep. of Germany, assignors to Firma Erwin Kampf GmbH & Co. Machinenfabrik, Mühlen, Fed. Rep. of Germany

Filed Nov. 2, 1978, Ser. No. 957,035
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749185
Int. Cl.² B29D 7/24; D06C 3/00
U.S. Cl. 26—73 3 Claims



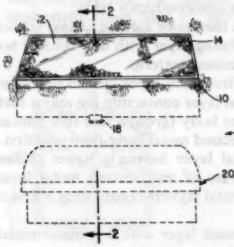
1. Simultaneous biaxally stretching machine for thermoplastic films, having tongs guide ways arranged on both sides of a running-in zone, a stretching zone, a fixing zone, and conveying means for the tongs, there being provided, at least, in individual straight sections of the tongs guide ways, spindles having screw guide ways, partly with changing lead, for the tongs, characterized in that the spindles (4) are provided as multiple-threaded spindles.

4,200,964

GRAVE SITE COVER

Fred H. Freitag, 182 E. Mary La., Valley Cottage, N.Y. 10989

Filed Mar. 5, 1979, Ser. No. 17,471
Int. Cl.² E02D 19/00
U.S. Cl. 27—30 7 Claims



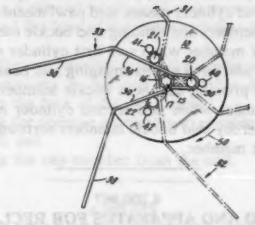
1. A grave site cover comprising:
a substantially box-shaped rigid outer casing having a size and shape to fit over a casket;
a similarly sized and shaped inner casing adapted to fit snugly into said outer casing;
anchoring means extending outwardly from at least one side wall of said outer casing; and
a transparent cover plate adapted to fit between said outer casing and said inner casing.

4,200,965

ROTARY STRIPPER

Robert B. Roth, New York, N.Y., assignor to Coastal Abrasive & Tool Company Inc., Trumbull, Conn.

Filed Aug. 21, 1978, Ser. No. 935,258
Int. Cl.² B21C 43/00; B23D 79/12; B23P 25/00
U.S. Cl. 29—81 J 16 Claims



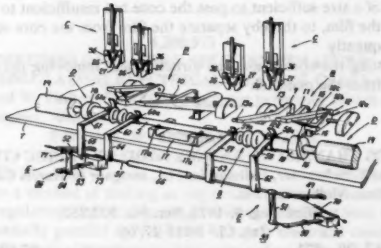
1. A rotary stripper comprising:
a plate having a periphery, a plate driving element secured to and extending normally of said plate;
a plurality of studs radially spaced from said plate driving element and upstanding from said plate;
at least one stripper member supported by and retained on each said stud; each said stripper member comprising wire means shaped to have two legs and said legs being connected at one end thereof in a sharp bend;
each said stripper member being placed such that said bend thereof passes around and engages a respective said stud on the side of that said stud away from said plate driving element; said legs of said stripper member extending from said bend past said plate driving element, with said plate driving element extending between said legs, and said legs extending beyond said periphery of said plate at the side of said plate away from the respective said stud, whereby each said stripper member defines two said stripper legs for stripping purposes.

4,200,966

APPARATUS FOR FIXING METAL CLAMP BANDS

Masatane Nakao, Fukuroi, and Yoshiji Ikuta, Iwata, both of Japan, assignors to NTN Toyo Bearing Company, Osaka, Japan

Filed Mar. 27, 1978, Ser. No. 890,393
Claims priority, application Japan, Mar. 25, 1977, 53-4690; May 10, 1977, 52-53830
Int. Cl.² B23P 11/00
U.S. Cl. 29—243.5 4 Claims



1. An apparatus for fixing a metal clamp band having a stick member and buckle members onto an object to be clamped, said apparatus comprising:
(a) a stick tilting means for tilting the stick member of said band towards the object, said stick tilting means including

a rotatable shaft member extending parallel to the axis of said object, arm means fixed to said shaft member for tilting said stick member when said shaft member is rotated and means for rotating said shaft member;

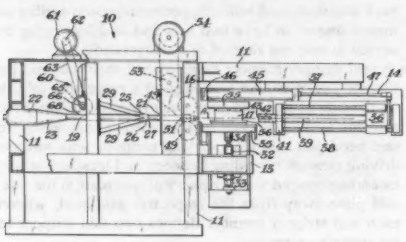
(b) buckle bending means for bending said buckle members to engage said stick member after said stick member has been tilted, said buckle bending means including a first and second cylinder means, pawl means coupled on said first and second cylinder means, said pawl means engaging said buckle members and bending said buckle members around said stick member when said first cylinder means is actuated and said pawl means engaging said bent buckle members and pressing said bent buckle members against said stick member when said second cylinder means is actuated, whereby said buckle members surround and engage said stick member.

4,200,967

METHOD AND APPARATUS FOR RECLAIMING POLYMER FROM SCRAP PLASTIC FILM ROLLS

Edward V. Dettmer, Linwood, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1978, Ser. No. 957,117
Int. Cl.[2] B26D 7/08
U.S. Cl. 29—426.2 **10 Claims**



1. A method for the separation of plastic film from a core upon which plastic film is wound, the steps of the method comprising

providing a roll of plastic film, the roll comprising a hollow generally cylindrical core having wound on the outer surface thereof a synthetic resinous film in a generally spiral configuration,

forcing the core of the roll over a generally elongate cylindrical mandrel while simultaneously

cutting through the film in a generally axial direction relative to the mandrel and core,

forcing the core and the cut film through a stripping means of a size sufficient to pass the core but insufficient to pass the film, to thereby separate the film from the core subsequently

slitting the core in an axial direction and removing the core from the mandrel.

4,200,968

VMOS TRANSISTOR AND METHOD OF FABRICATION

James E. Schroeder, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

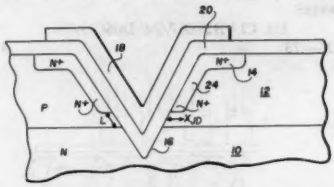
Filed Aug. 9, 1978, Ser. No. 932,232
Int. Cl.[2] B01J 17/00
U.S. Cl. 29—571 **15 Claims**

1. A method of fabricating a vertical insulated gate field effect transistor on a first layer of semiconductor material of a first conductivity type and a second layer of semiconductor material of a second conductivity type opposite said first conductivity type on said first layer comprising:

selectively diffusing impurities into said second layer of semiconductor material to form a surface region of said first conductivity type;

removing a portion of said surface region and said second layer of semiconductor material to form a groove whose depth is less than the thickness of said second layer;

introducing impurities into said groove to form a region of said first conductivity in said groove;



removing a portion of said second layer and said first layer to increase the depth of said groove into said first layer;

applying a layer of insulation in the groove; and

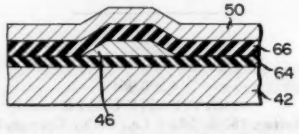
forming a gate electrode in the groove on said layer of insulation.

4,200,969

SEMICONDUCTOR DEVICE WITH MULTI-LAYERED METALIZATIONS

Masaharu Aoyama; Shunichi Hiraki, both of Yokohama, and Toshio Yonezawa, Yokosuka, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Sep. 9, 1977, Ser. No. 831,873
Claims priority, application Japan, Sep. 10, 1976, 51/107888
Int. Cl.[2] B01J 17/00
U.S. Cl. 29—577 R **12 Claims**



1. A process for fabricating a semiconductor device with multi-layered metalizations comprising the steps of:

preparing a semiconductor body;

forming on the major surface of said semiconductor body a first insulating layer with first contact holes arranged in a predetermined pattern;

forming a first metal layer on said first insulating layer, said first metal layer contacting the major surface of said semiconductor body through said first contact holes;

coating a second metal layer onto said first metal layer, said first metal layer having a lower etching rate than the etching rate of said second metal layer, said first and second metal layuers constituting a first conductive member;

forming a mask layer with a predetermined pattern on said first conductive member;

combining into a single etching means suitable etchants for each of said first metal layer and said second metal layer in concentrations selected from a wide range of useable and workable alternative combinations;

etching said first conductive member by etching means and by using said mask layer as a mask to remove unnecessary portions thereof so that said first conductive member has the side wall portions diverged to widen toward said semiconductor body;

removing said mask layer;

forming on said first conductive member a second insulating layer with second contact holes in a predetermined pattern;

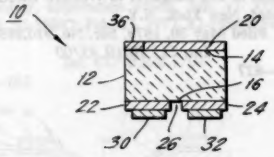
forming a second conductive member including at least one metal layer on said second insulating layer, said second conductive member contacting with said first conductive member through said second contact holes.

4,200,970

METHOD OF ADJUSTING RESISTANCE OF A THERMISTOR

Milton Schonberger, 195 Fern St., Westwood, N.J. 07885

Filed Apr. 14, 1977, Ser. No. 787,422
Int. Cl.² H01C 7/04
U.S. Cl. 29—593 **38 Claims**



1. A method of adjusting the resistance of a thermistor, comprising:

forming a first and a second electric contact on one surface area of an element of thermistor semiconductor material;

forming a third electric contact on another surface area of the element of thermistor semiconductor material, the contacts being formed such that the one and the other surface areas overlapping such that the first and second electric contacts overlap the third electric contact;

and the element of thermistor semiconductor material and the first, second and third contacts together comprise a thermistor;

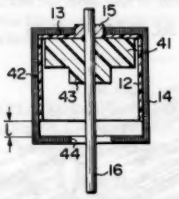
adjusting the resistance of the thermistor by trimming off part of at least one contact to reduce its area while keeping the one and the other surface areas overlapping such that the first and second electric contacts overlap the third electric contact after said trimming.

4,200,971

METHOD OF MANUFACTURING CUP-SHAPED COIL ASSEMBLY OF ELECTRIC MOTORS

Makoto Shimizu, and Kunikazu Shirakawa, both of Maruko, Japan, assignors to Shinano Kenshi Co., Ltd., Japan

Filed May 16, 1978, Ser. No. 906,558
Claims priority, application Japan, May 17, 1977, 52-56025
Int. Cl.² H02K 15/02
U.S. Cl. 29—598 **8 Claims**



1. A method of manufacturing a cup-shaped coil assembly for an electric motor which includes a cup-shaped coil having its one end left open and its other end closed by a coil wire and also including an output shaft which extends through the coil in the axial direction thereof; the method comprising the steps of

(a) assembling a coil bobbin assembly which includes a cylindrical member, a disc connected with one end of the cylindrical member to close it, a cap member adapted to be fitted into an opening in the other end of the cylindrical member, and an output shaft disposed in alignment with the axis of the cylindrical member and having its one end mounted in the disc and its other end extending through the cap member, the disc and the cap member being centrally formed with an outwardly projecting boss,

(b) providing a skewed winding of wire around the boss of the disc and the boss of the cap member to thereby form a coil,

(c) moving the cap member into the cylindrical member to leave an opening in one end face of the coil which is created by the boss of the cap member,

(d) enlarging the opening outwardly to provide an open end of the coil, and

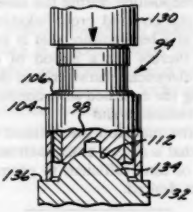
(e) removing the cap member from the coil.

4,200,972

METHOD OF MANUFACTURING A SOLENOID

Jay R. Katchka, Cypress, and Samuel T. Kelly, Torrance, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 816,656, Jul. 18, 1977, Pat. No. 4,142,169.
This application Oct. 16, 1978, Ser. No. 951,598
Int. Cl.² H01F 41/02
U.S. Cl. 29—602 R **5 Claims**



1. A method for forming a stationary pole piece for a solenoid assembly having a predetermined annular air gap which comprises:

distally mounting a shading ring on the end of a pole piece having a central, raised annular rim;

placing a flux ring over the assembly and onto said annular rim; and

advancing said flux ring into a predetermined axial position on said rim by pressing said assembly against a tool having a central boss to seat against the end of said pole piece and an annular shoulder at a precise, predetermined axial position relative to said central boss to engage said flux ring.

4,200,973

METHOD OF MAKING SELF-TEMPERATURE REGULATING ELECTRICAL HEATING CABLE

Richard W. Farkas, Stow, Ohio, assignor to Samuel Moore and Company, Aurora, Ohio

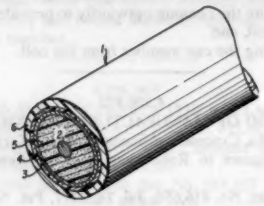
Filed Aug. 10, 1978, Ser. No. 932,552
Int. Cl.² H05B 3/10
U.S. Cl. 29—611 **6 Claims**

1. In a method of making an improved flexible self-temperature regulating electrical heating cable comprising at least two substantially parallel spaced-apart elongate electrical conductors electrically interconnected by means of an extruded, radiation cross-linked, electrically semi-conductive composition having a positive temperature coefficient of electrical resistance, said composition containing at least one polymeric component therein to provide sufficient crystallinity to promote the self-temperature heat regulating characteristics thereof and containing an amount of electrically conductive

particles dispersed therein that is controlled within the range of 17% to 25% by weight to the total weight of the composition, the method including the steps of:

(a) Extruding the cross-linkable composition about at least two substantially parallel spaced-apart elongate electrical conductors in such a manner as to provide a form having a cross-sectional shape transverse to the longitudinal axis thereof that is suitable for use as a heating cable and having the semi-conductive composition electrically interconnecting the spaced-apart conductors;

(b) Disposing a radiation penetrable shape retaining covering in encompassing relationship about the extruded composition and conductors that has a melt temperature that is



higher than the temperature chosen to anneal the composition such that the covering prevents or minimizes distortion of the composition during the annealing process;

(c) Annealing the covered cross-linkable semi-conductive composition at a temperature that is at least at the melt temperature thereof for a period of time sufficient to promote the electrical characteristics desired;

(d) Cross-linking the annealed semi-conductive composition by means of radiation; and

(e) Annealing the radiation cross-linked composition at a temperature that is at least at the melt temperature thereof for a period of time sufficient to promote the electrical characteristics desired.

4,200,974

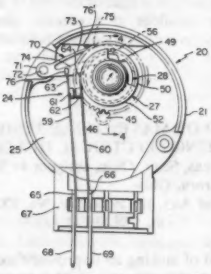
METHOD OF MAKING ELECTRICAL SWITCH CONSTRUCTION

Edgar E. Marquis, Newtown, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 742,756, Nov. 18, 1976, Pat. No. 4,100,381. This application Apr. 13, 1978, Ser. No. 896,048

Int. Cl.² H01H *43/10*

U.S. Cl. 29—622 **10 Claims**



1. In a method of making an electrical switch construction having an electrical switch provided with different operating conditions and having means operatively associating with said switch for causing said switch to be repetitively in one condition thereof a certain percentage of a certain increment of time and for being in another condition thereof for the remainder of said certain increment of time, said means being adapted to select the amount of said certain percentage of said certain increment of time within certain limits and including a rotatable cam member having a cam part for camming said switch to one of said operating conditions thereof during each revolution of said cam member, the improvement comprising the steps of forming said cam part of said cam member to be radially movable relative thereto, and forming said means to be adaptable to select a radial position of said cam part for camming said switch or a radial position of said cam part that will not cam said switch.

4,200,975

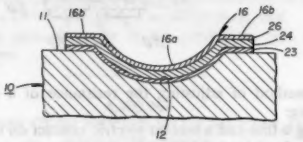
ADDITIVE METHOD OF FORMING CIRCUIT CROSSOVERS

Richard P. Debiec, LaGrange Park, and William T. Wydra, Darien, both of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed May 30, 1978, Ser. No. 910,989

Int. Cl.² H01R *43/00*

U.S. Cl. 29—827 **16 Claims**



1. A method of forming a circuit crossover, with an arched intermediate region, for subsequent use in crossing over an intervening circuit element of a substrate-supported circuit, comprising the steps of:

forming a mask-defined, exposed area on one planar surface of a frame member such that said exposed area extends across and a predetermined distance beyond opposite sides of a groove, previously formed with a concave base, in the one surface of the frame member;

plating said exposed surface area of said frame member to form a metallic crossover, of predetermined thickness, with two planar end regions interconnected by an intermediate arched region, the latter being formed within the concave base of said groove, said completely formed crossover thereafter remaining on the frame member until subsequently transferred to an associated circuit.

4,200,976

SHAVING UNITS

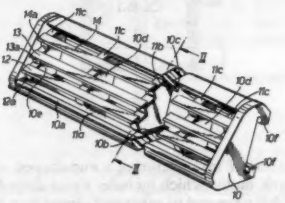
Trevor F. Gooding, Guildford, England, assignor to Wilkinson Sword Limited, England

Filed Nov. 14, 1977, Ser. No. 851,423

Claims priority, application United Kingdom, Nov. 16, 1976, 47631/76

Int. Cl.² B26B *21/06*

U.S. Cl. 30—47 **6 Claims**



1. A shaving unit comprising an open framework having a front edge, a rear edge, two end portions and at least one web extending between the front edge and the rear edge intermediate said end portions, a razor blade having a cutting edge

spaced at a predetermined distance from said front edge, said front edge providing a guard surface for the cutting edge of said razor blade, the ends of said razor blade being secured to respective ones of said end portions and a portion of said razor blade intermediate its end being secured to said web, said web being positioned in a plane parallel to said end portions and being stepped in the area where said razor blade is secured thereto, the cutting edge of said razor blade protruding past the front edge of said step.

4,200,977

CUTTER KNIFE

Toshihiko Kageyama, and Hidehei Kageyama, both of Kawagoe, Japan, assignors to Kotobuki & Co. Ltd., Kyoto, Japan

Continuation of Ser. No. 862,913, Dec. 21, 1977, abandoned.
This application Oct. 10, 1978, Ser. No. 950,031
Claims priority, application Japan, Jan. 17, 1977, 52-4093; Feb. 21, 1977, 52-19882; Feb. 21, 1977, 52-19883; Feb. 21, 1977, 52-19884
Int. Cl.² B26B *1/08*
U.S. Cl. 30—162 **5 Claims**

1. A cutter knife comprising:
(a) a band-shaped blade with an opening at the rear end thereof;
(b) a flat tubular holder with front and rear planar sides for holding said blade between said sides so as to make it movable in an axial direction of said holder, said holder being provided with an axial elongated hole in the front side thereof and with a plurality of engaging surfaces disposed along the axial direction on the rear side thereof and in alignment with the axial elongated hole, and
(c) an operating member disposed in the axial elongated hole including a manually operating portion for operating a lug penetrating from the front side of the holder through said opening in said blade and selectively engaging one of said engaging surfaces.

4,200,978

SHIELD FOR GRASS TRIMMER

Edward A. Irelan; Robert L. Bartlett, and John W. Walch, all of Columbia, Mo., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Dec. 6, 1978, Ser. No. 966,879
Int. Cl.² H01G *3/06*
U.S. Cl. 30—276 **10 Claims**

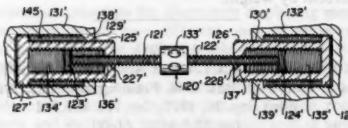
7. A shield for a grass trimmer including a housing having a base wall, a motor mounted in said housing, a hub member of a predetermined height extending from the base wall of said housing, a cutting line element attached to said hub member and extending outwardly therefrom, said hub member being coupled to said motor and driven rotatably thereby, said housing including a rim extending about the perimeter of said base wall, the height of at least a portion of said rim being greater than said hub member and first mounting means and a locking rib mounted on said rim portion, said shield comprising a generally planar member having a shape similar to that of said base wall of said trimmer housing, said member including second mounting means for engagement with said first mounting means on said trimmer housing for attaching said shield to said trimmer housing in spaced relation from said base wall with said hub member interposed therebetween and a resilient locking lever including means for lockingly engaging said locking rib on said trimmer housing upon engagement of said first and second mounting means for removably securing said shield on said trimmer housing.

4,200,979

ORTHODONTIC BIASSING DEVICE WITH SCREW DISENGAGEMENT PREVENTING MEANS

Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214

Filed Apr. 7, 1977, Ser. No. 785,587
Int. Cl.² A61C *7/00*
U.S. Cl. 433—7 **75 Claims**



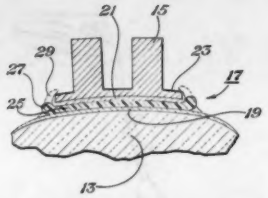
1. An orthodontic biassing device comprising:
at least one body member having a threaded bore therein;
an elongated threaded member which is threadably engaged in said threaded bore of said body member, said elongated threaded member comprising an outer threaded member threadably engaged in said at least one body member and having a threaded internal bore therein, and an inner threaded member which is threadably engaged in said threaded bore of said outer member; and
means adapted to couple said biassing device to at least one tooth for applying an orthodontic force to at least one tooth.

4,200,980

ORTHODONTIC FORMULATION AND METHOD

Reece W. Johnston, Fort Worth, Tex., assignor to Advance Dental Corporation, Fort Worth, Tex.

Filed Mar. 6, 1978, Ser. No. 883,408
Int. Cl.[2] A61C 7/00
U.S. Cl. 433—8 22 Claims



1. A method of affixing to at least one tooth a dental appliance, comprising the steps of;

a. effecting on a predetermined surface of the tooth to which a portion of a dental appliance is to be bonded a layer of catalyst that will effect polymerization of a bonding resin; said surface of said tooth being cleaned and dried so as to effect a good bond;

b. effecting on a cleaned and dried surface of at least a portion of said dental appliance that is to be bonded to said tooth a layer of said catalyst that would effect polymerization of said bonding resin; said surface of said at least a portion of said dental appliance being that which is to be disposed adjacent and bonded to said tooth;

c. applying intermediate said two layers of catalyst a layer of said bonding resin that will be polymerized by said catalyst and positioning said at least a portion of said dental appliance adjacent said surface of said tooth with the intermediate layer of resin between the two layers of catalyst on, respectively, said at least a portion of said dental appliance and said tooth surface so as to sandwich the thin layer of resin between the layers of catalyst and obtain polymerization of the resin and hence the necessary bonding of said at least a portion of the dental appliance to the surface of the tooth;

d. after allowing a cure time interval for completion of the cure of said bonding resin sufficiently that said at least a portion of the dental appliance is firmly affixed to said tooth, affixing the remainder, if any, of said dental appliance; and

e. a filler added to said resin to obtain the desired viscosity of said resin, to avoid creep and to obtain the desired wetability of the tooth and catalyst to said resin; said filler being present in a concentration in the range of 4–10 percent by weight.

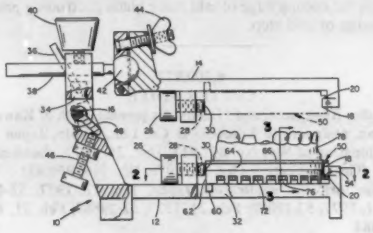
4,200,981

DENTAL ARTICULATOR AND TRAY SYSTEM

Ronald J. Fine, P.O. Box 2548, Framingham, Mass. 01701

Filed Sep. 26, 1977, Ser. No. 836,791
Int. Cl.[2] A61C 11/00
U.S. Cl. 433—60 15 Claims

1. A dental articulator and tray system in which said articulator comprises a pair of opposed tray mounting arms pivotally connected together and in which preformed dental model mounting trays are secured to said arms, each arm and the mounting tray secured thereto comprising cooperating means mutually engaged at positions spaced longitudinally along said arm adapted to resist lateral, vertical, and longitudinal movement of said tray relative to said arm, characterized in that said cooperating means comprises: an abutment on said arm having vertical side surfaces and a horizontal surface vertically spaced from and facing said arm and vertical side surfaces and a horizontal surface facing away from said arm on said tray respectively engaging said abutment side and horizontal surfaces to prevent lateral and vertical movement of said tray, said side and horizontal surfaces of said abutment and said tray being defined by a projection on one of said abutment and said tray extending into a recess on the other thereof; a clamp member spaced longitudinally along said arm from said abutment and



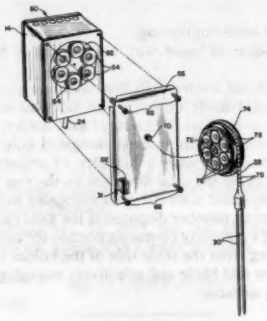
having an abutment surface releasably engaging a surface of said tray with force components directed toward said abutment and said arm to prevent longitudinal and vertical movement of said tray; and, adjacent said clamp member, mutually engageable means on said articulator and said tray to prevent lateral movement of said tray.

4,200,982

APPARATUS FOR AUTOMATICALLY SENSING AND RECORDING DATA IN A SEWAGE SYSTEM

Frederick N. Mueller, Dallas, and Ronald W. Chandler, Plano, both of Tex., assignors to Tetradyne Corporation, Carrollton, Tex.

Division of Ser. No. 803,773, Jun. 6, 1977, Pat. No. 4,136,561.
This application Sep. 29, 1978, Ser. No. 947,191
Int. Cl.[2] G01B 23/04
U.S. Cl. 33—126.6 15 Claims



7. A liquid level detector comprising:

a detector module mounted above the liquid level,

a reel rotatably mounted on said module, means in said module for rotating said reel,

a flexible elongated tape wound on said reel and having a lower portion hanging from said module,

probe means attached to said lower portion of said tape for detecting the presence of liquid,

apertures spaced along said tape,

means in said module responsive to said structure for determining the position of said probe means including a plurality of vertically spaced light emitting means, and

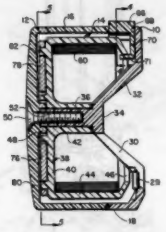
light responsive means for generating electrical signals representative of the passage of said apertures.

4,200,983

SELF-EXTENDING RULE

Robert F. West, West Simsbury, and James Elmore, Simsbury, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Feb. 8, 1979, Ser. No. 10,302
Int. Cl.[2] G01B 3/02; B65H 75/16
U.S. Cl. 33—138 **9 Claims**



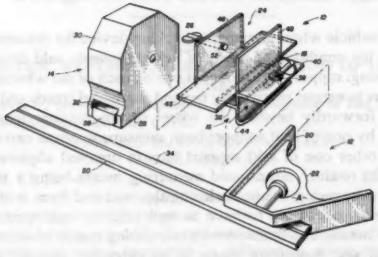
1. A case for a self-extending rule having a resilient blade which assumes a straight position in its relaxed state comprising a pair of case sections having flat top, bottom, and back walls, and arcuate side walls enclosing a generally cylindrical chamber, a front wall on the case having a generally arcuate opening in a lower sector thereof defined by a rim on the adjacent side wall and the edge of an reentrant web extending from the opposite side wall, the innermost portion of the web having a center post extending from its underside and projecting axially into the chamber, a cup having a hub rotatably mounted on the center post and having its open side facing the front wall, said cup being adapted to receive nested convolutions of the blade inserted endwise through said opening and underneath the edge of the web, a brake mounted for rectilinear movement in a radial opening in the flat top wall of the rule, said brake having a portion engageable with the open lip of the cup, and a spring biasing the brake into engagement with the cup.

4,200,984

DETACHABLE TOOL COMBINING BRACKET AND METHOD

Ray D. Fink, R. D. #1, Box 419, York Haven, Pa. 17370

Filed Mar. 12, 1979, Ser. No. 19,451
Int. Cl.[2] G01B 3/10; B43L 7/00
U.S. Cl. 33—138 **4 Claims**



1. A detachable tool combining bracket to interchangeably assemble in a relative right-hand or alternately a left-hand use application combined fixed spaced relationship of one to the other a combination square tool and a tape measure tool such that a tape measure rule of said tape measure tool is disposed to be retractibly extended perpendicularly away of the rectilinear external edge of a square rule of said combination square tool thereby enabling the quick and efficient accomplishment of measurement and marking off along a longitudinal workpiece at least one longitudinal dimension thereof perpendicular thereto, said bracket comprising in combination:

a. a support frame having interconnected horizontal and vertical members,

b. a first integrally formed channel member of said support frame adapted to receive and detachably retain therein by a first compressive means an adjustable head element right angle segment of said combination square tool,

c. a second integrally formed channel member of said support frame adapted to receive and detachably retain therein by a second compressive means a tape measure housing of said tape measure tool, and

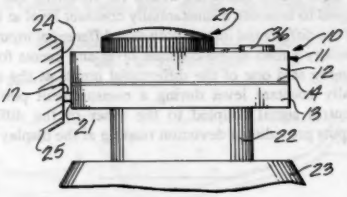
d. means to respectively effect self-supporting unattended balance upon said longitudinal workpiece, and longitudinally guide therealong, said combination square tool during extension of said tape measure rule in the accomplishment of perpendicular dimension measurement and marking functions being respectively an upwardly disposed laterally projecting flange integral to said support frame adapted to supportively engage the upward disposed surface of said longitudinal workpiece and a downwardly disposed flange integral to said support frame and communicating perpendicularly of said upwardly disposed laterally projecting flange to form a recessed right-angle configuration therewith adapted to cooperatively communicate with the longitudinally disposed outward projecting right-angle juncture surfaces of said longitudinal workpiece during measurement and marking displacement longitudinally thereof.

4,200,985

VISUAL INDICATOR FOR ALTERNATE UNITS OF MEASURE

Irven H. Culver, Playa del Rey, and Oleg Szymber, Palos Verdes, both of Calif., assignors to Primus Mfg., Inc., San Lorenzo, P.R.

Filed Jan. 18, 1978, Ser. No. 870,466
Int. Cl.[2] G01B 3/12
U.S. Cl. 33—141 R **21 Claims**



1. Mechanical apparatus for alternately displaying measurements, in either one of two different units of measure, the apparatus having an input shaft rotatable about an axis fixed in a frame and comprising dimensionless rotary indicator means carried by the frame at a fixed location thereon to be visually observable by a user, the indicator means having rotatable input means and including scale means calibrated in units and selected fractions thereof, motion amplifying gear means carried by the frame and continuously coupled to the indicator means for operating the indicator input means faithfully in response to rotation of the apparatus input shaft, the gear means including alternate input gears rotatable about separate axes alternately engageable in a more directly driven relation than the other with a single common drive gear driven in response to rotation of the apparatus input shaft, and selectively operable mode selector means operable for engaging one or the other of the alternate input gears in said more directly driven relation, the gear ratios between the input gears and the indicator input means being different by an amount corresponding to the conversion factor between the two different units of measure, the scale means itself being dimensionless

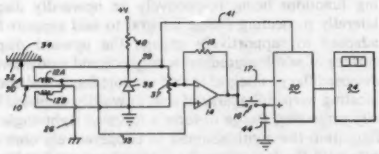
with the same aspects thereof operable to display a measurement when one of the alternate input gears is more directly engaged with the apparatus input shaft as when the other alternate input gear is more directly engaged with the apparatus input shaft.

4,200,986

DIGITAL INDICATOR

Gary M. Ackerman, and Nicholas Edgington, both of Worcester, Mass., assignors to AIT Corporation, Worcester, Mass.

Filed Sep. 21, 1978, Ser. No. 944,347
Int. Cl.² G01B 7/34
U.S. Cl. 33—174 P **14 Claims**



1. An indicator for digitally displaying measurement in surface deviation from a reference measurement, comprising;
cantilever means having contact means for contacting the surface to be measured,
means supporting the cantilever means so that the contact means is positioned to contact with the surface,
strain gage means associated with the cantilever means for providing a control signal,
ditigal meter and display means having differential inputs,
a hold means having one side coupled to one of the differential inputs,
and means coupling the control signal to the other side of the hold means and to the other of the differential inputs,
said hold means including means for receiving the control signal to establish a substantially constant level at said one of the differential inputs, both said differential inputs being initially nulled at the constant level and means for maintaining said one of the differential inputs at the substantially constant level during a measurement period, the control signal coupled to the other of the differential inputs providing a deviation reading at the display means.

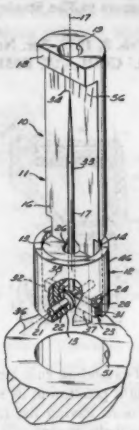
4,200,987

GAUGE

Marvin G. Schmitt, 9475 Cormorant Cir., Fountain Valley, Calif. 92708

Filed Oct. 10, 1978, Ser. No. 949,746
Int. Cl.² G01B 3/42, 3/46, 5/08
U.S. Cl. 33—178 R **12 Claims**

1. A gauge comprising a support providing a cylindrical surface having a first axis, said cylindrical surface having a first diameter a sufficient amount smaller than the diameter of hole to be measured to permit easy insertion of said cylindrical surface into said hole, a paddle journaled on said support for pivotal movement about a second axis substantially perpendicular to said first axis and providing oppositely extending extensions, each extension providing an end face aligned with said cylindrical surface when said paddle is in a first position, said paddle providing a first diagonal having a length equal to the minimum diameter of a hole to be measured and a second diagonal equal to the maximum diameter of a hole to be measured, and operator means operable to pivot said paddle around said second axis while said paddle and cylindrical surface are in a hole to be measured from said first position toward a second position in which said first diagonal is perpendicular to said first axis and toward a third position in which said second diagonal is perpendicular to said first axis.

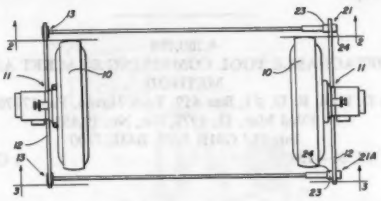


4,200,988

WHEEL ALIGNMENT CHECKING DEVICE

Lee Hunter, 13501 Ladue Rd., Creve Coeur, Mo. 63141

Filed Sep. 14, 1978, Ser. No. 942,315
Int. Cl.² G01B 5/24
U.S. Cl. 33—203.2 **6 Claims**



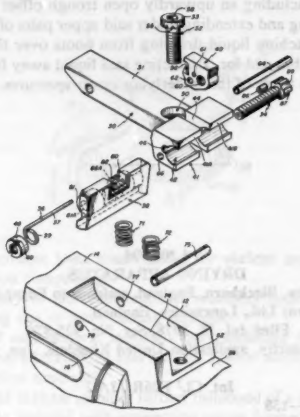
1. A vehicle wheel alignment checking device for determining the toe condition of a pair of vehicle wheels, said device comprising: support bars mounted one on each of the wheels in positions to extend rearwardly beyond the wheel treads and to extend forwardly beyond the wheel treads; retainer means carried by one of said support bars; measuring means carried by the other one of said support bars in opposed alignment with said retainer means, said measuring means being a reel tape having casing means enclosing the tape and from which the tape is extendable to have an end held by said opposed retainer means; and measurement calculating means cooperating with said measuring means in its extended position for determining the difference in the measured distance rearwardly and forwardly of the wheel treads, said calculating means including an index member establishing the measurement forwardly of the wheel treads, said index member being mounted adjacent said casing means to be adjacent the path of tape extension toward said retainer means; and a member positioned adjacent and movable relative to said index member for displaying the measurement obtained rearwardly of the wheel treads in relation to said index member.

4,200,989

GUN SIGHT

Paul E. Brouthers, Monson, Mass., assignor to D.W.A. Associates, Inc., Monson, Mass.

Filed Mar. 23, 1979, Ser. No. 23,259
Int. Cl.[2] F41G *1/16*
U.S. Cl. 33—257 **12 Claims**



1. A rear sight for a hand gun accommodated in a slot in the top strap of the gun frame over the cylinder opening comprising:

a somewhat elongated body disposed in the frame slot having means pivoting the body from the frame at its front end, a horizontal dovetail channel and a centrally disposed vertical slot,

an elevation screw,

a windage screw,

a sighting blade having means slideably interlocking with the dovetail channel of the body and means for receiving the windage screw in a horizontal attitude,

a windage plate disposed in the vertical slot in the body and having means for threadedly receiving the windage screw,

said body having means for receiving the elevation screw in a vertical attitude,

said elevation screw accommodated in a tapped hole in the gun frame rearwardly of the cylinder opening,

the pivot for the body being at a location spaced forwardly of the elevation screw and over the cylinder opening.

4,200,990

METRIC RAFTER SQUARE AND METHOD OF USING SAME

Robert F. West, West Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Oct. 19, 1978, Ser. No. 952,691
Int. Cl.[2] B43L *7/00*
U.S. Cl. 33—476 **15 Claims**

1. A metric rafter square comprising a body and a tongue intersecting at a right angle at one end thereof, said body and tongue having respective lengths of at least 400 and 300 millimeters and scales graduated in millimetres along the outer edges thereof commencing at said intersection of the outer edges of said tongue and body, said body having between the edges thereof a rise per metre table and said tongue having a rectilinearly extending rise per metre scale thereon with graduations and with numerical values increasing from said intersection towards the opposite end thereof, said rise per metre table being based upon a preselected pivot point along said body scale within the range of 175–225 millimetres, the numerical values of said rise per metre scale of said tongue being cooperatively compressed along the length thereof and being greater than the actual values for the unit length designated thereby and cooperating with the values set forth in said rise per metre table to establish the required angles between said preselected

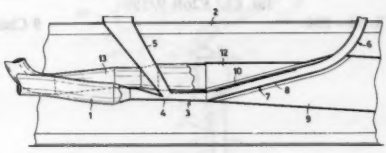
pivot point on said body scale and a cooperating point on the tongue scale aligned with the graduation on said rise per metre scale determined from said table.

4,200,991

DRIER FOR SMALL SIZED MATERIALS

Domenico Gazzoni, Como, Italy, assignor to Sorema, Srl, Erba, Italy

Filed Jun. 19, 1978, Ser. No. 916,862
Int. Cl.[2] F26B *17/00*
U.S. Cl. 34—57 R **5 Claims**



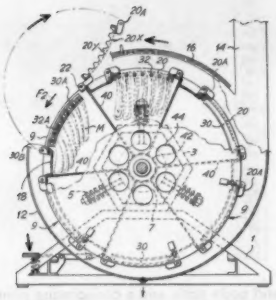
1. A drier for lightweight material of small particle size comprising a main air stream duct for introducing a main air stream for conveyance, a plenum communicating with said main air stream duct, a hopper communicating with said plenum for introducing material, said hopper being placed at the outlet of said main air stream duct, a duct communicating with said plenum for conveyance of the material by means of said air stream from said plenum, said conveyance duct forming an acute angle with said main air stream duct and having a gridlike wall for retaining the material and deflecting it in the direction of conveyance, and at least one secondary airflow duct communicating with said conveyance duct through bores formed through a wall thereof opposite to the gridlike wall aforesaid for introducing a secondary airflow, said bores being so formed that said secondary stream enters the conveyance duct by forming an acute angle with said gridlike wall and flows in a direction concordant with that of the main air stream.

4,200,992

DRIERS FOR DRYING SKEINS OF YARNS AND OTHER PURPOSES

Antonio Zumpano, Via del Pozzo 13, Catena, Quarrata, Pistoia, Italy

Filed Mar. 9, 1979, Ser. No. 19,243
Claims priority, application Italy, Mar. 16, 1978, 9378 A/78
Int. Cl.[2] F26B *11/04*
U.S. Cl. 34—58 **6 Claims**



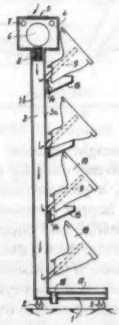
1. In a rotary drier suitable for drying skeins of yarn suspended on rods, a rotor mounted for rotation about a horizontal axis, said rotor including means defining a shell and enclosing a hollow interior and opening means defined in said shell to provide access to the interior of the rotor, doors for closing the openings, and support means adjacent the openings for receiving the ends of said rods with the skeins suspended thereon, and within said shell and means for rotating said rotor to provide a centrifugal effect and for effecting air circulation through said hollow interior for drying.

4,200,993

APPARATUS FOR DRYING BOOTS

Roger Blanc, Izeaux, (Isere), and Serge Jorcin, Corenc Montfleury, (Isere), both of France

Filed Jul. 14, 1978, Ser. No. 924,713
Claims priority, application France, Oct. 24, 1977, 77 32832
Int. Cl.[2] F26B *9/10*
U.S. Cl. 34—104 **9 Claims**



1. An apparatus for drying boots, said apparatus comprising:

a hollow housing having an upright side wall formed with a plurality of upper pairs of apertures and a plurality of lower pairs of apertures;

means including a blower in said housing for expelling air from said apertures;

a plurality of upwardly inclined tubes each having a lower end secured to said housing over one aperture of a respective pair of said apertures and an upper end formed with an outlet hole, each of said tubes and the respective one aperture being positioned with respect to the other aperture of the respective pair so that when a boot is hung over the tube heated air from the other aperture of the respective pair passes over the boot; and

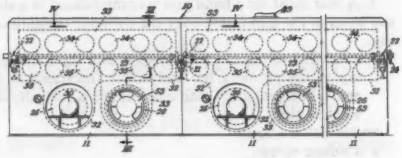
means including an upwardly open trough offset from said housing and extending under said upper pairs of apertures for catching liquid dripping from boots over the respective tubes and for conducting said liquid away from boots on the tubes of the underlying lower apertures.

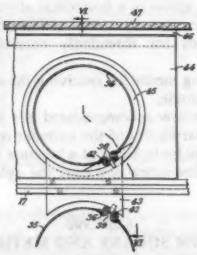
4,200,994

DRYING APPARATUS

Leslie Mellor, Blackburn, England, assignor to Edgar Pickering (Blackburn) Ltd., Lancashire, England

Filed Jul. 18, 1978, Ser. No. 925,876
Claims priority, application United Kingdom, Jun. 28, 1978, 33010/78
Int. Cl.[2] F26B *13/02*
U.S. Cl. 34—158 **4 Claims**





1. A drying apparatus, for use in drying tufted carpets following application of latex thereto, comprising a housing for engaging the edges of the carpet during its passage through the housing, one stenter chain occupying a fixed position in the housing and the other stenter chain being laterally adjustable to suit the width of the carpet, said housing including a space above the carpet for circulation of hot air, tubes in the housing which are disposed above and below the stenter chains and extend transversely to the direction of travel of the carpet, the tubes having longitudinal slots constituting nozzles which direct hot air onto the top and bottom surfaces of the carpet, means for blowing hot air into the tubes, tapes coupled to the adjustable stenter chain and movable with it to blank off the portions of the slots which are offset from the carpet and a screen mounted for lateral movement with said adjustable stenter chain to increase and decrease said space in accordance with the adjustment imparted to said chain.

4,200,995

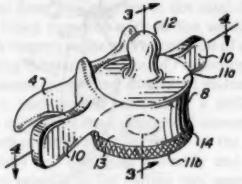
JOINT CONSTRUCTION FOR SKELETAL MODEL

Phyllis L. Trella, 2264 Calle Iglesia, Mesa, Ariz. 85202

Continuation-in-part of Ser. No. 772,579, Feb. 28, 1977, abandoned. This application May 25, 1978, Ser. No. 909,533

Int. Cl.[2] G09B *23/34*

U.S. Cl. 35—17 **10 Claims**



1. A movable joint construction for skeletal models, said construction comprising:

a plurality of simulated skeletal members each of which having one or more mating surfaces,

each of said skeletal members corresponding to a single skeletal element of a real skeletal system which said construction simulates,

each said skeletal member further fashioned of a deformable plastic material with connection means formed integrally therein,

said connection means capable of snappably attaching one of said skeletal members to a second adjacent skeletal member at said respective mating surfaces,

said connection means comprising a plurality of emanating connection members and a plurality of receiving socket portions capable of snappably receiving said respective connector members of an adjacent skeletal member,

said connection means positioned and dimensioned to permit relative movement between said skeletal members in a manner characteristic to the action of the real skeletal elements being simulated thereby;

at least one of said first or second adjacent skeletal members having proximate its respective mating surfaces thereof a simulated cartilage portion,

said simulated cartilage portion being integrally formed as part of one or more of said plurality of simulated skeletal members,

said adjacent skeletal members sandwiching said cartilage portion therebetween when said one skeletal member is snappably attached to said second skeletal member.

4,200,996

TEACHING DEVICE AND METHOD FOR DENTAL X-RAY TECHNIQUES

Albert G. Richards, 395 Rock Creek Dr., Ann Arbor, Mich. 48104

Filed Jul. 21, 1978, Ser. No. 926,909

Int. Cl.[2] G09B *23/28*

U.S. Cl. 35—17 **18 Claims**

3. A teaching device for the development of skill in X-ray techniques which comprises:

(a) an object subject to radiographic examination,

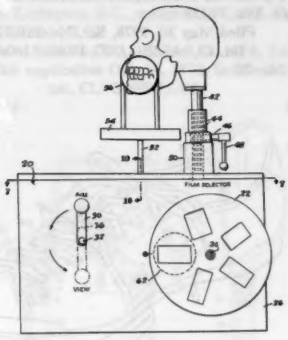
(b) a plurality of displayable unit X-ray records derived from X-ray exposures of said object in a multiplicity of incremental varying positions,

(c) a first means forming an informational storage bank of said plurality of unit records,

(d) a second means to simulate an X-ray source,

(e) a third means movably to mount said second means adjacent a representation of said object,

(f) fourth means to display a single unit record from said storage bank, and



(g) selector means responsive to the positioning of said second means to position for display a particular single unit record from said storage bank.

4,200,997

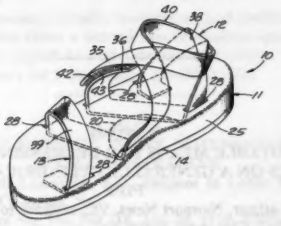
SANDAL

Myron G. Scheinhaus, 11213 Tiara St., North Hollywood, Calif. 91601, and Paul R. Jacobson, 10641 Stagg St., Sun Valley, Calif. 91352

Filed Feb. 21, 1978, Ser. No. 879,139

Int. Cl.[2] A43B *3/12*

U.S. Cl. 36—11.5 **22 Claims**



1. A sandal comprising:

a sole assembly having an insole and an outsole provided with first and second flattened passages arranged at an acute angle in the same direction crosswise of the midlength of said sole assembly;

first and second straps having their remote ends secured to the opposite edges of said sole assembly adjacent the opposite ends thereof;

said first strap having the rear end portion thereof forming a heel-embracing loop and its forward end portion passing through said first passage with the free end thereof exposed adjacent one side of said sole assembly;

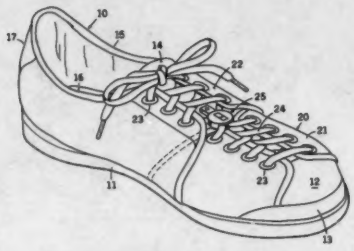
said second strap having its forward end portion forming a toe-embracing loop before entering said second passage and having its rear end portion operatively connected with said heel-embracing loop and so arranged as to form a figure-eight loop about the wearer's heel and arch; and

means for releasably securing the free ends of said first and second straps together.

4,200,998
LACING ASSEMBLY FOR A SHOE

Thomas M. Adams, c/o Kaepa, Inc., 10203 IH 35 North, San Antonio, Tex. 78233

Filed May 30, 1978, Ser. No. 910,774
Int. Cl.[2] A43B 11/00; F16G 11/04
U.S. Cl. 36—50 2 Claims

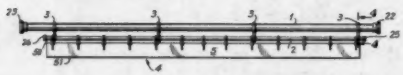


1. In a lacing assembly for a shoe:
(a) side quarters including separate lower and upper vamp sections,
(b) a single, continuous lace having only one pair of ends, the single lace lacing both and extending between the lower and upper vamp sections, and having the one pair of lace ends selectively tied at the top of the upper vamp section, and
(c) a clamp interconnecting the single lace at the top of the lower vamp section for selectively fixing or loosening the lace at the top of the lower vamp section and adjusting the fit of the lower vamp section for the comfort of the wearer independently of the upper vamp section, the said one pair of lace ends being separately, selectively tied at the top of the upper vamp section and adjusting the fit of the upper vamp section for the comfort of the wearer independently of the lower vamp section.

4,200,999
PIVOTABLE MEANS FOR DECREASING DRAG EFFECTS ON A GENERALLY CYLINDRICAL DREDGE PIPE

John P. Latimer, Newport News, Va., assignor to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed May 30, 1978, Ser. No. 910,424
Int. Cl.[2] E02F 3/90
U.S. Cl. 37—54 16 Claims

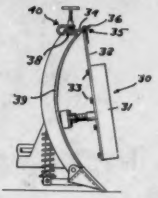


1. In a length of pipe having a longitudinal axis and intended to be moved through the water in a direction transverse to the longitudinal axis, the improvement comprising a flat relatively thin plate pivotally connected tc the length of pipe, the plate pivoting about an axis located radially outwardly of the pipe circumference and substantially parallel to the longitudinal axis of the pipe and the plate extending along at least a major portion of the length of the pipe, whereby the drag and vibration stress exerted on the pipe during such transverse motions through water is substantially reduced.

4,201,000
SNOW PLOW ATTACHMENT

George H. Stanford, 191 Spurwink Rd., Scarborough, Me. 04074

Continuation-in-part of Ser. No. 830,569, Sep. 6, 1977, abandoned. This application May 30, 1978, Ser. No. 910,373
Int. Cl.[2] E02F 3/76
U.S. Cl. 37—117.5 11 Claims

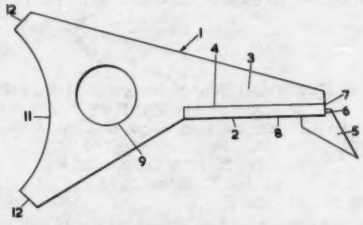


1. An attachment for a concave snow plow blade to enable a vehicle equipped with such a plow to push a bumper-equipped vehicle, said attachment including a first part that is to engage the vehicle bumper and of substantial vertical extent, hinge means detachably attaching said part at least to the upper portion of the blade in a position such that only the vehicle bumper is engaged during the pushing thereof, a second part and means connecting said second part to said first part to extend rearwardly thereof, said second part including a member engageable with a zone of substantial length in the central portion of the blade, vertically considered, when the first part is attached to the plow blade and then operable to brace the first part against any material rearward movement from said position while a vehicle is being pushed, the width of said first part less than the vertical extent thereof and the length of said member greater than the width thereof so as to then prevent any material lateral displacement of said second part.

4,201,001
EARTH MOVING EQUIPMENT

Robert L. Croucher, Sherwood, Martins Hill La. Burton, and Ernest G. Robson, 19 Seafield Rd., Friars Cliff, both of Christchurch, Hampshire, England

Continuation of Ser. No. 744,347, Nov. 23, 1976, abandoned, which is a continuation of Ser. No. 568,813, Apr. 17, 1975, abandoned. This application Jun. 12, 1978, Ser. No. 914,690
Claims priority, application United Kingdom, Jan. 22, 1975, 2480/75
Int. Cl.[2] E02F 3/24
U.S. Cl. 37—190 1 Claim



1. An earth excavating machine adapted to cut, break and excavate soil and minerals over a wide swathe incorporating a cutting tool assembly comprising an axially rotatable drum member and a plurality of cutting tools mounted on and extending radially from said rotatable drum member, in evenly spaced circumferential and axial relationship and distributed substantially symmetrically in pairs about the plane passing through the mid-point of the rotatable drum member perpendicular to the axis thereof, each cutting tool comprising a support arm narrow in the axial direction having an inner end

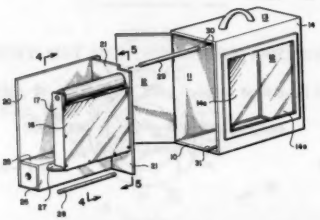
fixed to the rotatable member and an outer end remote from the rotatable member, a shovel member having an unenclosed, flat working face relatively wide with respect to the narrow dimension of said support arm mounted at the outer end of the support arm, and a plurality of cutting teeth disposed in parallel spaced relationship fixed to each shovel member and extending radially outwardly therefrom forwardly of its working face, with the teeth of circumferentially successive cutting tools being offset from one another in the axial direction, the shovel member being mounted with its flat working face in a plane radial with respect to the axis of rotation of said rotatable member and being substantially free of projections other than said teeth, and means for guiding excavated material towards a desired location, said means comprising a deflector casing which partially surrounds the cutting tool assembly from the level of the unexcavated earth in front of the cutting tool assembly upwardly and over said assembly and is so shaped and positioned in relation to the cutting tool assembly that the gap between the tips of the cutting teeth and the inner surfaces of the casing gradually increases in the intended direction of rotation of the cutting tool assembly, the rear edge of said casing lying rearwardly of the path of movement of the cutting teeth of said cutting tools so that, as the machine moves forward and the cutting tool assembly rotates, excavated material is carried upwardly and then rearwardly over the cutting tool assembly between said assembly and the casing.

4,201,002

CONTINUOUS VISUAL DISPLAY APPARATUS

Edson K. Barton, 552 W. 750 S., Orem, Utah 84057

Filed May 20, 1977, Ser. No. 798,892
Int. Cl.² G09F *11/12*
U.S. Cl. 40—524 **10 Claims**



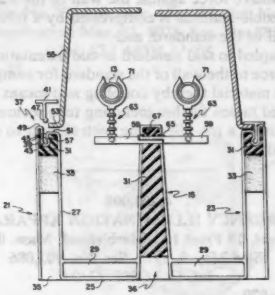
9. A display apparatus for continuously exhibiting matter on an endless belt or the like, comprising a cabinet having a bottom forming a floor inside of the cabinet, a back panel, a front panel, at least a portion of said front panel comprising a display area, and side panels, at least one of which opens to give access to the inside of the cabinet; an essentially flat plate in said cabinet, said plate being positioned flatwise directly behind and spaced from the display area in said front panel, with the bottom edge of said plate being spaced from the floor of the cabinet, an essentially horizontally disposed drive roller positioned along the top of said plate, with the longitudinal axis of said drive roller being essentially parallel with the plane of said plate; mutually spaced, retaining members positioned above the drive roller; a nip roller positioned in the space between the retaining members and supported by the drive roller; means for driving the drive roller; a storage space behind the flat plate; a floating idler roller located below the flat plate; an endless display belt or web continuously movable in a circuitous path from the storage space to and beneath said floating idler roller, then between the flat plate and the display area in said front panel to the drive roller, then between the drive roller and the nip roller, and back to the storage space wherein the excess slack in the belt or web is stored in loose folds; and means for biasing the floating idler roller so that it cants toward the back of the apparatus.

4,201,003

APPARATUS FORMING THREE DIMENSIONAL SIGN DISPLAY CHARACTER

Frank A. Witt, Lexington, S.C., assignor to Colite Industries, Inc., West Columbia, S.C.

Continuation of Ser. No. 700,218, Jun. 28, 1976, Pat. No. 4,122,616. This application Oct. 16, 1978, Ser. No. 951,511
Int. Cl.² G09F *13/04*
U.S. Cl. 40—545 **8 Claims**



1. In a sign character element of the type housing gas-filled tubes, or the like, spaced above the base of the character element for luminous sign letter display, a tube supporting structure comprising:

standard means for defining a supporting structure, said standard means having a bottom portion unitarily molded with the base of a sign character element, and formed of a shape for rising upward from the base to provide support at a distance spaced above the base;

platform means rotatably mounted to said standard means at a position spaced above the base, said platform means rotatable about a first axis of rotation transverse to the base; and

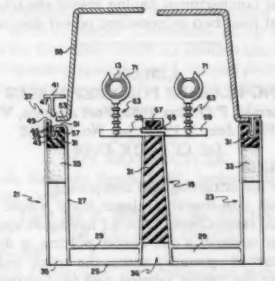
tube stand means rotatably mounted to said platform means for rotation about a second axis of rotation spaced laterally with respect to said first axis of rotation, said tube stand means for supporting a gas-filled tube.

4,201,004

APPARATUS FORMING THREE DIMENSIONAL SIGN DISPLAY CHARACTER

Frank A. Witt, Lexington, S.C., assignor to Colite Industries, Inc., West Columbia, S.C.

Continuation of Ser. No. 700,218, Jun. 28, 1976. This application Oct. 16, 1978, Ser. No. 951,512
Int. Cl.² G09F *13/04*
U.S. Cl. 40—545 **3 Claims**



1. In a sign character element of the type housing gas-filled

tubes, or the like, spaced above a base of the character element for luminous sign letter display, a tube supporting structure comprising:

a hollow light fixture support standard thinly molded from a plastic-type material;

and including an indentation formed in said support standard in the area of the top thereof;

flexible material disposed within the hollow of said support standard in the area of said formed indentation, said flexible material compressible within the hollow for providing an expansive force against the wall of the standard when said flexible material is compressed by a force applied to the wall of the standard; and

means coupled to said standard at said indentation for applying a force to the wall of the standard for compressing said flexible material thereby coupling said means to said standard said means further including tube securement means for securing a gas-filled tube with respect to said support standard.

4,201,005

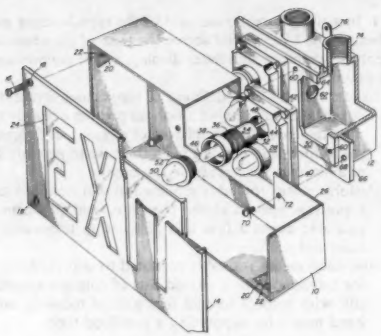
EMERGENCY ILLUMINATION APPARATUS

James A. Hunt, 19 Frost La., Marblehead, Mass. 01945

Filed May 5, 1978, Ser. No. 903,086

Int. Cl.[2] G09F *13/04*

U.S. Cl. 40—570 **18 Claims**



1. An electrical illuminated sign apparatus for emergency illumination in hazardous atmosphere locations comprising:

(a) a housing comprising a forward compartment, a substantially sealed rear compartment, and a divider wall between them having sealed lighting sockets for receiving a plurality of illuminating lamps on the forward compartment side;

(b) said forward compartment having a substantially opaque forward face with translucent lettering or sign areas; and,

(c) said rear compartment having sealed electrical connections to at least two independent power sources.

4,201,006

OSCILLATING FLASHER FOR DEEP WATER FISHING

Milo N. Wetherald, P.O. Box 1053, Port Angeles, Wash. 98362

Filed Jun. 2, 1978, Ser. No. 911,968

Int. Cl.[2] A01K *85/04*

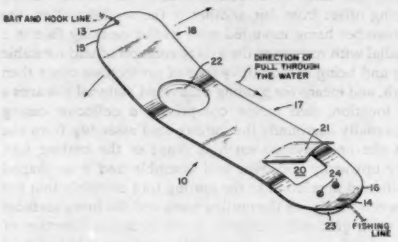
U.S. Cl. 43—42.06 **9 Claims**

1. A flasher for attracting fish comprising:

an elongated, non-floatable planar body whose length-to-width ratio ranges from 3:1 to 5:1 having an upper surface and lower surface, a flat center portion, a downstream portion curved upwardly across the entire width thereof relative to the center portion and an upstream portion curved downwardly across the entire width thereof relative to the center portion,

means for securing a fishing line to the upstream end of the flasher and for securing bait and a fish hook to the downstream end of the flasher, and

a substantially square opening in the upstream portion of the body having a width and length greater than half the width of the body and a flap substantially the size of the opening connected to the downstream side of the opening,



the flap extending upwardly on the upper side of the body of the flasher at an angle with respect to the flat center portion of the body of about 20° to cause the flasher body, when pulled through the water, to oscillate horizontally about a vertical axis extending through its point of connection to the fishing line.

4,201,007

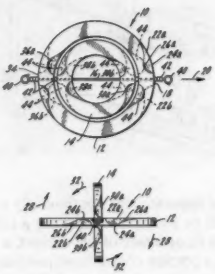
FISHING LURE

Arthur Backstrom, 7204 S. Avers Ave., Chicago, Ill. 60629

Filed Aug. 28, 1978, Ser. No. 937,044

Int. Cl.[2] A01K *85/00*

U.S. Cl. 43—42.12 **2 Claims**



1. A fishing lure comprising:

a rod;

an outside circular spinner rotatably mounted on the rod and having pairs of primary and secondary bevelled surfaces located on the front outside and following inside rim respectively, each pair being located adjacent to and on either side of the rod, the primary and secondary surfaces on a first side of the rod beginning at the rim on a first face of the spinner and angling across the spinner thickness to a second spinner face while the primary and secondary surfaces on the second side of the rod begin at the rim of the second spinner face and angle across the spinner thickness to the first face; and

an inside circular spinner rotatably mounted on the rod and having pairs of primary and secondary bevelled surfaces located on the front outside and following inside rim respectively, each pair being located adjacent to and on either side of the rod, each bevelled surface of the inside spinner angling across the spinner thickness in the opposite direction from the correspondingly located surface on

the outside spinner so that the spinners rotate in opposite directions about the rod.

4,201,008

FISHING LURE AND SPINNER

James M. Sparkman, Rte. 1, Box 118-B, Brookline, Mo. 65619

Filed Jan. 18, 1979, Ser. No. 4,555
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—43.13 10 Claims

1. A spinner for use on a fishing lure comprising a blank made from a sheet of metal having lugs at opposite ends thereof bent in parallel planes and at substantially right angles to the plane of said blank and on opposite sides thereof, said lugs having holes therethrough for revolvably supporting said spinner upon a supporting wire, a substantially circular opening through said blank spaced approximately equidistant from said lugs, a pair of concial protrusions extending outwardly from the plane of said blank, each of said protrusions having its base portion at said opening and its vertex adjacent to said lug, each of said protrusions being on opposite sides of said blank from the lug adjacent thereto, and having laterally directed curved and oppositely bent impeller blades extending outwardly from a line connecting said holes.

4,201,009

COMBINED HAT AND THROWABLE AMUSEMENT DEVICE

Len Burridge, Jr., Longwood, Fla., assignor to Ronald G. Haag, Haines City, Fla.

Filed Jul. 17, 1978, Ser. No. 924,969
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—1 F 7 Claims

1. A combined hat and throwable amusement device, comprising in combination:

a hat crown having an inverted bowl shape with a top region and a lower terminating edge;

a substantially symmetrical hat brim extending from said terminating edge of said hat crown;

said hat crown and said hat brim being a flexible and a water-absorbent material for increasing the weight of the hat upon immersion in water;

the increased weight of the hat as a result of the absorbed water increasing the aerodynamic stability of the device;

a plurality of slot apertures uniformly located about said hat crown with each of said slot apertures extending only partially between said top region and said lower terminating edge enabling air current to flow through said plurality of slot apertures to increase the aerodynamic stability of the device when the device is sailed through the air;

said plurality of slot apertures slightly opening as a result of the centrifugal force of the rotation of the device as the device sails through the air; and

a hat band extending about said hat crown comprising a buoyant material to provide flotation to the device upon immersion of the device in water

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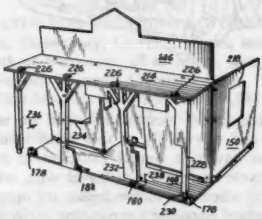
4,201,010

TOY HOUSE WITH ROOF-SUPPORTING STANCHIONS

D. David Abrams, Kowloon, Hong Kong, assignor to Mego Corp., New York, N.Y.

Division of Ser. No. 777,850, Mar. 15, 1977, Pat. No. 4,107,869.
This application Mar. 13, 1978, Ser. No. 885,750
Int. Cl.[2] A63H *33/08*
U.S. Cl. 46—12 8 Claims



1. A toy house assembled from a plurality of panels and comprising a plurality of flat planar panels, said panels including

(a) a first panel, said first panel being a vertically oriented panel.

(b) a second panel, said second panel being horizontally oriented for assembly and including a central floor section and two lateral sections on opposite sides of the central floor section, each lateral section being connected along one edge thereof to said central floor section by a bendable connection, so that said lateral sections are capable of being elevated to form upright wall sections perpendicular to said central wall section.

(c) connection means along one side edge of each upright wall section and mating connection means along both vertical edges of said first panel, so that said first panel and said upright wall sections are connectable perpendicular to each other,

(d) a third panel, said third panel being a roof panel mountable along one edge thereof to said first panel and supported along the opposite edge by a plurality of stanchions, each of said stanchions extending vertically from attachment of said third panel to mounting means along an edge of said second panel, and

(e) the matable connection means provided so that the first panel and each of the upright wall sections are connectable perpendicular to each other comprising a plurality of spaced apart L-shaped protrusions along each vertical edge of the first panel which are slidable into lock position in corresponding spaced apart L-shaped protrusions along one side edge of each of the upright wall sections.

4,201,011

TOY MOTORCYCLE

John S. Cook, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jul. 5, 1978, Ser. No. 922,149
Int. Cl.[2] A63H *29/20*
U.S. Cl. 46—209 15 Claims

12. In a toy motorcycle, the combination comprising:

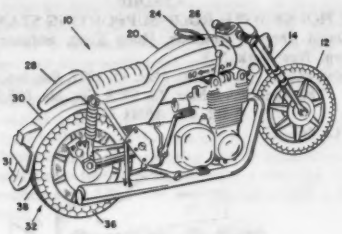
a framework;

a front wheel rotatably mounted on said framework;

a rear drive wheel assembly coupled to said framework;

manually operable motor means mounted at least partially within said framework;

gear means interconnecting said manually operable motor means and the drive wheel of said drive wheel assembly for rotating the drive wheel in response to operation of said motor means; and



a weighted fender member mounted on said framework above and rearwardly of said drive wheel, said fender member having a weight sufficient to enable said toy motorcycle to commence travel with said front wheel elevated when said motor means are operative with the drive wheel engaging a supporting surface.

4,201,012

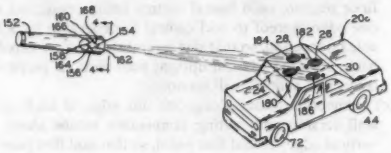
REMOTE CONTROL VEHICLE

Harry L. Marshall, 14330 Zubrick Rd., Roanoke, Ind. 46783

Filed Apr. 13, 1978, Ser. No. 895,859

Int. Cl.[2] A63H *30/00*

U.S. Cl. 46—256 **10 Claims**



1. A remote controllable vehicle apparatus comprising:

a vehicle body having a self-contained power supply mounted therein;

first, second, third, and fourth light responsive members mounted on said body and spaced from one another to be selectively illuminated;

first motor means coupled to said power supply in motor driving power receiving relation for providing a rotative drive in first and second rotative directions;

steering means being mounted to said vehicle body for steering said vehicle body in rightward and leftward directions;

said first motor means being drive-coupled to said steering means to steer said vehicle body in a rightward direction upon a first rotative drive direction and in a leftward direction upon a second rotative drive direction;

a manually pointable light source for selectively illuminating said members;

said first and second light responsive members being coupled to said first motor means and said power supply to couple said first motor means to said power supply to provide a rotative drive in said first direction when said first member is illuminated by said light source and to provide a rotative drive in said second direction when said second member is illuminated by said light source;

a second motor means coupled to said power supply in motor driving power receiving relation for providing a rotative drive in first and second rotative directions;

propelling means being mounted to the vehicle body for propelling said vehicle body in forward and reverse directions;

said second motor means being drive-coupled to said propelling means to propel said vehicle body in a forward direction upon a first rotative drive direction of said second motor means and in a rearward direction upon a second rotative drive direction of said second motor means;

said third and fourth light responsive members being coupled to said second motor means and said power supply to couple said second motor means to said power supply to provide a rotative drive in said first direction of said second motor means when said third member is illuminated by said light source and to provide a rotative drive in said second direction of said second motor means when said fourth member is illuminated by said light source.

4,201,013

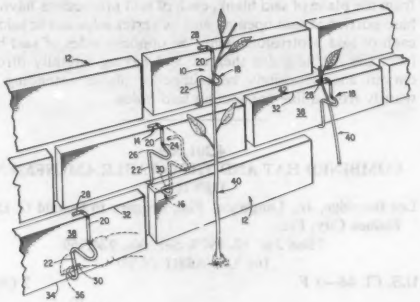
VINE SUPPORT AND/OR GUIDE CLIP FOR INSTALLATION ON BRICK WALLS

Raymond E. Robbins, Rte. 1, Lowell, Ark. 72745

Filed May 10, 1978, Ser. No. 904,394

Int. Cl.[2] A01G *9/12*

U.S. Cl. 47—44 **7 Claims**

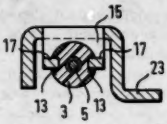


1. A support and/or guide clip for climbing vines, especially for masonry building walls consisting of individual generally rectangular masonry units and comprising a unitary, resilient wire clip having an intermediate generally horizontally outwardly projecting return bent formation having spaced ends, a pair of oppositely directed, generally vertically oriented offset arm portions at the spaced ends of said return bent formation, said arm portions having terminal ends and a pair of angular formations at the terminal ends of said arm portions extending in a plane generally normal thereto but in a direction opposite that of said return bent formation, said angular formations each comprising a first leg at the terminal ends and a second leg, the second legs of said angular formations extending in relative opposite directions and having free ends terminating in a location offset one from the other taken along a vertical plane, each angular formation occupying a horizontal plane generally normal to its respective arm portion, said arm portions being arranged along first and second intersecting planes, the intersection of which defines an obtuse angle whereby the clip is bowed inward yet is spreadable for installation engaged across the face of the masonry unit with the angular formations engaged on the lengthwise generally parallel side surfaces of the masonry unit with the arm portions generally parallel and the return bent formation defining with the face of the masonry unit, a loop to receive the stem of a climbing vine therethrough.

4,201,014
OPERATING MECHANISM FOR A MOTORCAR WINDOW

Peter Hess, Coburg, Fed. Rep. of Germany, assignor to Metallwerk Max Brose GmbH, Coburg, Fed. Rep. of Germany

Filed Nov. 23, 1977, Ser. No. 854,138
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1976, 2656428
Int. Cl.² E05F 11/48
U.S. Cl. 49—325 9 Claims



1. In a window operating mechanism including a window carrier movable in a predetermined path, a driving device, an elongated bowden cable including a tension member and a compression member, said tension member drivingly connecting said carrier and said device, and said compression member being formed with a longitudinal bore therethrough receiving said tension member, and retaining means associated with respective, longitudinally terminal portions of said compression member adjacent said carrier and said device respectively for abuttingly retaining the associated portions, the improvement which comprises:

(a) said compression member essentially consisting of flexible material, and at least one of said longitudinally terminal portions thereof being of non-circular cross section,

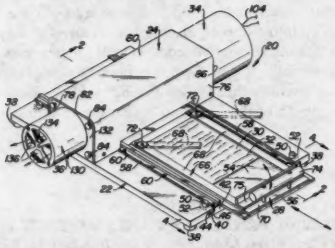
(b) the retaining means associated with said one portion including a retaining member conformingly engaging said one portion and thereby preventing angular movement of the engaged portion about an axis longitudinal of said bowden cable, and

(c) said retaining member being formed with a recess receiving said one longitudinally terminal portion, and said retaining means including yieldably resilient means opposing longitudinal movement of said compression member inward of said recess.

4,201,015
FILM IMAGE REMOVAL PROCESS AND APPARATUS

William K. Reim, 20 Oak Ave., Penndel, Pa. 19047

Filed Jul. 20, 1978, Ser. No. 926,464
Int. Cl.² B24B 7/02
U.S. Cl. 51—74 R 8 Claims

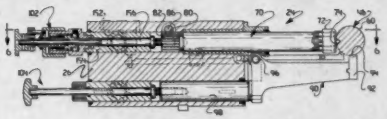


1. Apparatus for removing an image disposed on a surface of a section of film comprising a housing, carrier means and scaling means, said scaling means comprising a rotatable wheel about which a strip of abrasive material is releasably secured by clamping means, said carrier means comprising a tray arranged for reciprocation into said housing and under said wheel, with the distance said tray is disposed below said wheel being adjustable, said tray including a clamping means in the form of a hingedly secured generally U-shaped frame comprising a pair of side legs and a cross-piece defining an opening, said frame arranged for disposition over edge portions of said film section to secure said film section on said tray with its image carrying surface exposed in the opening, said carrier means being moved relative to said scaling means to carry said film section into contact with said scaling means, whereupon said scaling means scraps along the exposed surface of said film section to remove the image therefrom.

4,201,016
APPARATUS FOR GRINDING A WORKPIECE

Calvin K. Kirk, Shrewsbury; Glover C. Joyce, and Francis L. Messier, both of Worcester, all of Mass., assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Mar. 16, 1978, Ser. No. 886,996
Int. Cl.² B24B 5/04
U.S. Cl. 51—105 SP 16 Claims



1. An apparatus for use in an initial grinding operation in which a workpiece is ground to a first diameter and in a second grinding operation in which the workpiece is ground to a second diameter which is smaller than the first diameter to which the workpiece is ground during the initial grinding operation, said apparatus comprising a base, a movable steadyrest member, support surface means disposed on said steadyrest member for engaging the workpiece during the initial and second grinding operations, first drive means for moving said steadyrest member relative to said base through a predetermined distance between a first reference position and a second reference position in which said support surface means is closer to the workpiece than in the first reference position by an amount equal to the predetermined distance, second drive means for moving said steadyrest member relative to said base from the first reference position to press said support surface means against the workpiece during the initial grinding operation and for moving said steadyrest member relative to said base from the second references position to press said support surface means against the workpiece during the second grinding operation, said second drive means including means for moving said first drive means through the predetermined distance relative to said base with said steadyrest member upon movement of said steadyrest member between the first and second reference positions, sensor means for detecting when the workpiece is out-of-round upon completion of the initial grinding operation, and control means connected with said sensor means and said first and second drive means for effecting operation of said second drive means to move said steadyrest member relative to said base from the first reference position to engage the workpiece with said support surface means during the initial grinding operation, for effecting operation of said first drive means to move said steadyrest member from the first reference position to the second reference position in response to said sensor means detecting that the workpiece is out-of-round upon completion of the initial grinding operation, and for effecting operation of said second drive means to move said steadyrest member from the second reference position to engage the workpiece with said support surface means during the second grinding operation.

4,201,017

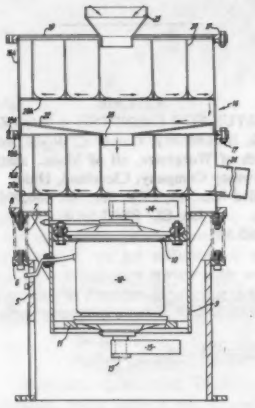
METHODS AND APPARATUS FOR THE TREATMENT OF PRODUCTS

Anthony F. Davenport, and Harry B. Brailsford, both of Stoke-on-Trent, England, assignors to William Boulton Limited Stoke-on-Treat, England

Continuation-in-part of Ser. No. 723,844, Sep. 16, 1976, abandoned. This application May 19, 1978, Ser. No. 907,731

Int. Cl.[2] B24B *31/00*

U.S. Cl. 51—163.2 **12 Claims**



1. A method of treating products comprising introducing a charge of at least two products into a treatment vessel, subjecting the vessel to a vibratory movement in the form of a rotary oscillation about a generally vertical axis with an up and down component superimposed thereon, constraining the charge to travel along and around a spiral path of gradually increasing radius in a horizontal plane from a central receiving zone to a peripheral discharge zone, and discharging the products at said discharge zone.

4,201,018

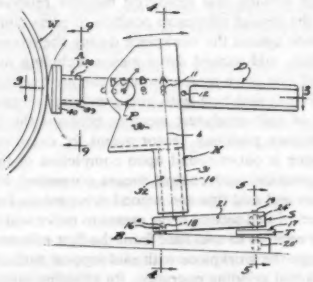
CABBING DEVICE FOR GEMSTONES

Clarence Pool, 8321 Passons Blvd., Pico Rivera, Calif. 90660

Filed Oct. 23, 1978, Ser. No. 953,643

Int. Cl.[2] B24B *9/16*

U.S. Cl. 51—229 **16 Claims**



1. A device for generating the convex surface of a cabochon selectively about two right angularly related axes, by offering the same up to a grinding surface, and including;

a horizontally disposed base centered on a vertical plane before said grinding surface,

a standard with means adjustably positioning the same with respect to said grinding surface, and comprised of a platform disposed over the base and a substantially vertical pivot standing upward therefrom to move in said plane toward the grinding surface,

a hub free to be revolvably manipulated about the first mentioned pivot and having a horizontal series of transversely disposed pivot openings extending from the first mentioned pivot,

and an elongated dop-head arm free to be revolvably manipulated about the second mentioned pivot openings and having a multiplicity of transverse pivot openings in a series extending longitudinally thereof to be individually and selectively aligned with one of said series of pivot openings on the hub,

the dop-head arm being coupled a selective position by a replaceable pivot pin, whereby a workpiece carried by a head at the forward extremity thereof swivels about two distinct selected axes of rotation into engagement with the grinding surface to form a compound curvature thereon.

4,201,019

GREENHOUSES

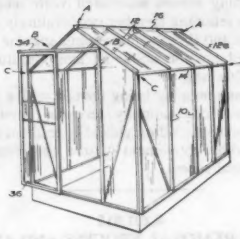
Colin Jones, Sheffield, England, assignor to Linkman Building Company Limited, Tinsley, England

Filed Jul. 14, 1978, Ser. No. 924,907

Claims priority, application United Kingdom, Dec. 1, 1977, 50170/77

Int. Cl.[2] A01G *9/14*

U.S. Cl. 52—15 **4 Claims**



1. In a greenhouse, a ridge member of hollow section; a T-slot in the underside of the ridge member; respective corner jointing brackets disposed at opposite ends of the ridge member and secured thereto by T-bolts depending from the T-slot; and pairs of endmost sloping glazing bars secured to said jointing brackets, said respective corner jointing brackets being provided with pairs of shallow projections flanking respective holes through which the T-bolts extend, said projections engaging the mouth of the T-slot to stiffen the resulting joints.

4,201,020

BUILDING PANEL AND PANEL ASSEMBLY

Frederick H. Saunders, 13 McAllister St., Breakwater, Victoria, Australia

Filed Aug. 4, 1977, Ser. No. 821,800

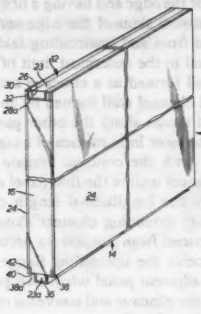
Claims priority, application Australia, Aug. 6, 1976, PC6908; Feb. 3, 1977, PC8936

Int. Cl.[2] E04C *1/10*; E04B *2/28*

U.S. Cl. 52—580 **10 Claims**

1. In combination to form a panel assembly, a pair of building panels each comprising a facing sheet, a plurality of substantially parallel, mutually spaced apart elongate primary beams secured along longitudinal faces to one side of the sheet

and respective pluralities of spaced beam segments bracing each pair of said primary beams, wherein the panels are coupled edge to edge by bridging together in a plurality of pairs adjacent beam segments of the respective panels.



4,201,021

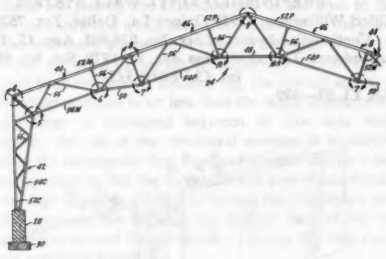
BUILDING FRAME CONSTRUCTION

John Aldag, Chicago, Ill., and Willis L. Wells, Clayton, Mo., assignors to Bantam Systems, Inc., Chicago, Ill.

Filed May 8, 1978, Ser. No. 903,752

Int. Cl.[2] E04B *7/02*; E04C *3/08, 3/11*

U.S. Cl. 52—93 **4 Claims**



1. In a building frame of the type having a plurality of transverse sub-frames which form the roof support beams and side wall columns of the building, with girts and purlins interconnecting the sub-frames, and end wall columns and girts enclosing the building frame, each sub-frame comprising a plurality of interconnected truss units and each truss unit including an inner main beam and an outer main beam interconnected by a plurality of braces, the improvement comprising a main beam construction for the truss units which permits attachment of any number of purlins and girts at any point along the beam, each outer main beam comprising a pair of angle members each having integrally formed at the edge of at least one of its legs a flange extending substantially ninety degrees inwardly toward the opposite leg, the pair of angle members being aligned so that their flanges are in facing relation but are separated by a slot between the angle members, the slot running uninterruptedly the length of the outer main beam to provide an attachment point for a purlin or girt fastener at any point along its length;

and spacer means for holding the pair of angle members in their spaced facing relationship.

4,201,022

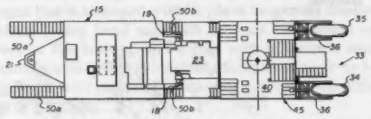
WHEELED PORTABLE WELL DRILLING AND WORKOVER APPARATUS

Gary L. Jennings, Houston, Tex., assignor to Pyramid Manufacturing Company, Houston, Tex.

Filed Sep. 8, 1978, Ser. No. 940,761

Int. Cl.[2] E04H *12/34*

U.S. Cl. 52—118 **1 Claim**



1. In a portable well drilling and workover apparatus for a well location having a telescoping mast, drawworks and a base substructure support, the invention comprising:

a. first trailer means including wheels for moving said trailer means over the terrain;

b. second trailer means including wheels for moving said trailer means over the terrain, said wheels on said second trailer means being constructed and arranged whereby they may be elevated when said second trailer means is on the well location;

c. said first trailer means including support means to support the telescoping mast and drawworks thereon;

d. said second trailer means including an upright structure and A-frame for transferring the telescoping mast from said first trailer means to said second trailer means to support the mast in upright position on said second trailer means to conduct well operations;

e. cooperating means on said first and second trailer means to position them together to form the base substructure support;

f. additional means on said first trailer means to support the telescoping mast on said first trailer means in position for pivotal engagement with said A-frame on said upright structure of said second trailer means whereby it may be transferred to said second trailer means for raising to an upright position for conducting well operations said additional means including:

1. elevated platform means on said second trailer means; and

2. ramp means connected to said elevated platform means on said second trailer means whereby said first trailer means may be positioned on said elevated platform to position the telescoping mast for pivotal engagement with said upright portion; and

g. said first trailer means including a platform to provide a working floor adjacent the drawworks which is lower in vertical elevation than the upper end of said upright structure.

4,201,023

THREE-DIMENSIONAL STRUCTURES MADE OF BEAMS AND PLATES

Otto Jungbluth, Frankensteiner Strasse 99, 6100 Darmstadt-Eberstadt, Fed. Rep. of Germany

Filed Feb. 3, 1978, Ser. No. 874,878

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1977, 2704953

Int. Cl.[2] E04H *12/00*

U.S. Cl. 52—334 **17 Claims**

1. A three dimensional structure comprising:

a plurality of substantially parallel profiled metal frame beams (1) arranged in a substantially horizontal direction;

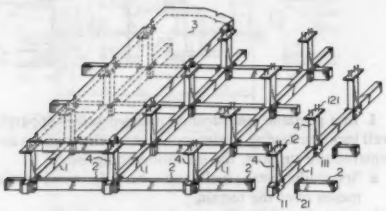
a plurality of spaced apart substantially vertical profiled metal web members (4) coupled to said horizontal frame beams (1);

adjacent ones of said horizontal frame beams (1) being

spaced apart a greater distance than the spacing between adjacent vertical web members (4) but no more than three times the spacing between adjacent vertical web members (4);

a plurality of substantially parallel profiled metal joists (2) connected between adjacent ones of said horizontal frame beams (1) and extending substantially perpendicularly to said frame beams in a substantially horizontal direction;

said frame beams (1) each having substantially vertical side flanges;



connecting and reinforcing means (11, 21, 211) coupled to said side flanges of said frame beams (1) and to ends of said joists (2) for connecting said side flanges of a frame beam (1) with respective joists (2) to provide greater resistance to bending, transversal force and torsion and for reinforcing the respective junction areas of a frame beam (1) and respective joists (2);

a top sheet-like member (3); and

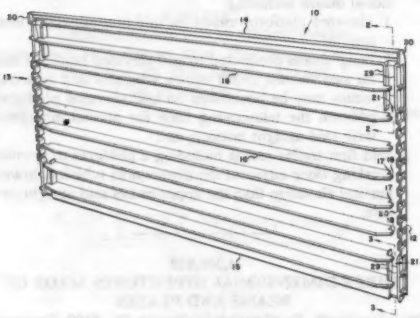
plate means (12,121) connecting top portions of said vertical web members (4) to said sheet-like top member (3).

4,201,024

PLASTIC/COMPOSITE STRUCTURAL PANEL

George A. Lafitte, Jr., Atlanta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Jan. 17, 1977, Ser. No. 759,884
Int. Cl.[2] E04B 1/62; E04C 2/38
U.S. Cl. 52—394 7 Claims



1. A two-sided, non-metallic structural panel of a rectangular shape with a first and second pair of opposite panel edges comprising;

first means incorporated along each of said first pair of opposite panel edges and on the same side of the panel to provide a pathway extending substantially the entire longitudinal length of the panel edges for a support flange to slideably pass therethrough when the panel is mounted on a pair of spaced support flanges;

second means incorporated along each of said second pair of opposite panel edges of mutually opposing configuration that are interlockingly engageable so that adjacent panels can be interconnected and when so connected can be both pulled and pushed relative to the support flanges when mounted thereon, said second means along one panel edge comprises a channel extending substantially the longitudinal length of the edge and having a first channel wall distal to the outermost limit of the edge and a second channel wall spaced from and confronting said first channel wall and proximal to the outermost limit of the edge, said first channel wall formed as a concave arcuate undercut and said second channel wall formed by an upstanding flange, said second means along the other panel edge comprises an edge outermost limit surface of a convex arcuate shape compatible with the concave arcuate undercut forming the first channel wall in the first panel edge and extending substantially the longitudinal length of the edge, and a longitudinally extending channel along said other panel edge and spaced from the convex arcuate shaped surface so as to receive the upstanding flange on the first panel edge of an adjacent panel when two panels are interconnected and the concave and convex arcuate surfaces are in contact with each other;

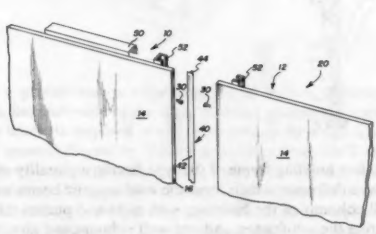
and third means extending between said first pair of opposite panel edges for resisting deflections between the first pair of opposite panel edges while minimizing resistance to arcuate deflections of the panel between the second pair of opposite panel edges.

4,201,025

PREFINISHED VINYL WALL SYSTEM

Elliott Williamson, 11915 Quincy La., Dallas, Tex. 75230

Continuation-in-part of Ser. No. 824,901, Aug. 15, 1977, abandoned. This application Apr. 13, 1978, Ser. No. 896,093
Int. Cl.[2] E04B 5/52
U.S. Cl. 52—489 7 Claims



1. A method for mounting wall panels to structural supports in an cffice building to form office modules, comprising the steps of:

inserting clipping means into the abutting edges of first and second prefinished wall panels;

securing adjacent first prefinished wall panels onto ceiling and floor tracks disposed in parallel relation to one another;

guiding a second panel into abutment with said first panel so that clipping means inserted in said second panel engages the freely floating temporary retaining means disposed rearward the joint of the abutting panels; and

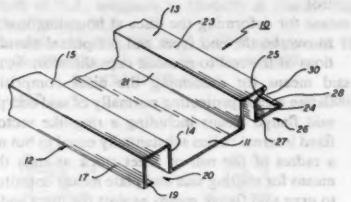
permanently cementing the rearward side of said first and said second panels away from the edges thereof to studs attached to the building and disposed in said ceiling and in said floor tracks.

4,201,026

STRUCTURAL MEMBER

Wesley T. Murphy, Auburn, N.Y., assignor to E.T.I. Corporation, Auburn, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,826
Int. Cl.[2] E04C *3/32*
U.S. Cl. 52—731 6 Claims



1. A structural member in channel-like form including an elongated web having first and second open-sided flanges depending laterally from the opposed edges thereof,

said flanges each including a base that is parallel with the web and projected to one side thereof by means of a perpendicular inner side wall, and further including an outer side wall in parallel alignment with the inner side wall which terminates in the plane of the web to establish an opening that faces the opposite side of the web,

said first flange being rectangular in form and having a foreshortened arm secured to the terminal end of its outer side wall which is turned inwardly to restrict the flange opening, and

said second flange having a base that extends outwardly beyond its outer side wall a distance at least equal to the length of the foreshortened arm of the first flange, an inclined leg joining the extended end of the base to the outer side wall and a rail outwardly extended in the plane of the web from the terminal edge of the outer side wall, said rail having a lip on the extended end thereof that is turned back toward the inclined leg, the overall length of the rail being equal to or less than the inside width of the first flange as measured between its two side walls whereby the rail of one structural member is receivable within the rectangular first flange of another similar structural member so that the foreshortened arm of said rectangular first flange is able to be turned into the space provided between the inclined leg and the base of the rail supporting second flange thereby locking the two structural members together.

4,201,027

DEVICE FOR INSERTING TAPE CASSETTES OR THE LIKE AND ENCLOSURES PARTICULARLY INTO HINGED BOXES

Heino Ilsemann, Wehkamp 3, 2800 Bremen, Fed. Rep. of Germany

Filed Aug. 16, 1978, Ser. No. 934,198
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737196; Aug. 2, 1978, 2833862
Int. Cl.[2] B65B *57/06, 43/39*
U.S. Cl. 53—53 9 Claims

1. A device for inserting tape cassettes or the like and enclosures into hinged boxes, comprising:

(a) a revolving head having a drive shaft and a vertical axis of rotation and capable of being turned in a step-wise manner by means of work gearing;

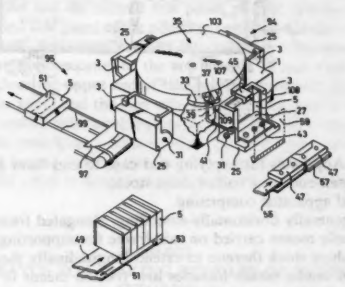
(b) said worm gearing including a worm gearing portion, which is rigidly connected to the drive shaft of said revolving head, and also including a continuously driven screw which is in engagement with said work gear portion and whose pitch is zero along a first angular range, preferably of 210°, and whose pitch is different from zero along a second angular range, preferably 150°;

(c) four holding devices being arranged at the periphery of said revolving head which are angularly offset relative to each other by 90°, said holding devices each serving to receive a hinged box;

(d) each holding device having two vertically arranged holding jaws for grasping the short narrow sides of one hinged box having a cover in such a manner that the hinged box is arranged with its plane tangential relative to said revolving head and with the axis of rotation of its cover at the bottom, and a flap with a vacuum suction member, which flap is rotatably supported so as to be in alignment with points of rotation of said cover or with the axis of rotation;

(e) a stationary cam disc with a control cam is arranged parallel to the plane of rotation of said revolving head and concentrically thereto, in which curved rollers engage which are assigned to each holding device and are arranged on said revolving head and which, by means of a curved lever and a pull rod connected thereto which are arranged on said revolving head, open or close the flap of the respective holding device depending on the angular position of said revolving head;

(f) the revolving head having a periphery, opposite which, are arranged in a stationary manner and always offset by 90°, a box inserting station, a cassette inserting station, a station for pushing out rejects and a normal pushing-out



station; said box inserting station having a conveyor belt for feeding empty hinged boxes in an upright position in which they stand on a narrow side of the cover and in which the folding direction for opening said cover is directed away from said revolving head, and having a sliding member for inserting always one box into a holding device of said revolving head, which holding device is located opposite said box inserting station; said cassette inserting station having a conveyor belt for supplying said cassettes in a position in which they are lying on said conveyor belt in such a way that the long narrow side of the tape of the cassette is facing towards said revolving head, having a stacking tower which is arranged above the travel path of the supplied cassettes and assigns an enclosure to each cassette to be inserted, and devices for always inserting a cassette and an enclosure into an open box which is located in a holding device of said revolving head, said holding device being arranged opposite said cassette inserting station; said station for pushing out rejects having a keying device for checking whether a filled box can be opened which is arranged in a holding device of said revolving head, which holding device is located opposite said pushing-out station for pushing out rejects and with a sliding member for ejecting those boxes from the respective holding device which cannot be properly opened; said normal pushing-out station having a sliding member for pushing out from the respective holding device a filled cassette which is arranged in the flat

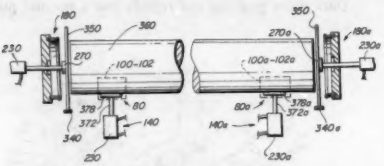
holding device of said revolving head which is positioned opposite said normal pushing-out station and having a device for conveying away the ejected, filled hinged boxes; and wherein a complete rotation of the driven screw of said worm gearing corresponds to a 90° rotation of the drive shaft of said revolving head and, thus, to a work cycle, wherein, in the first partial angular range of said screw in which its pitch is zero, a holding device each is arranged in a stationary manner opposite each of the box inserting stations, the cassette inserting station, the station for pushing out rejects and the normal pushing-out station, and in the second partial angular range of said screw in which its pitch is different from zero, further rotation of said revolving head takes place so that the several holding devices are moved ahead toward the respective subsequent station.

4,201,028

APPARATUS FOR APPLYING END CAPS TO ROLLS OF SHEET STOCK

George Melehan, Downers Grove, Ill., assignor to Chippewa Paper Products Corporation, Hillside, Ill.

Filed Sep. 15, 1977, Ser. No. 833,437
Int. Cl.[2] B65B *49/08*
U.S. Cl. 53—137 **2 Claims**



1. Apparatus for applying end caps to end faces at each of opposed ends of a roll of sheet stock,

said apparatus comprising,

a generally horizontally-extending, elongated frame,

cradle means carried on said frame for supporting a roll of sheet stock thereon to extend longitudinally therealong,

said cradle means includes low friction means to facilitate rotation of said roll about a longitudinal axis thereof while supported on said frame,

a pair of longitudinally spaced end-cap-shaping assemblies including generally parallel end plate means having surfaces facing corresponding end faces of the roll and extending essentially normally to a longitudinal axis thereof, for abutment against the end faces of the roll,

slide rail means carried on said frame and extending longitudinally between said end-cap-shaping assemblies,

one of said assemblies being slidably shiftable along a substantial lineal expanse of said slide rail means,

means for selectively adjusting lineal spacial separation between opposed said end-cap-shaping assemblies for accommodating rolls of different overall length on said frame,

and means for locking said shiftable end-cap-shaping assembly in each of a plurality of selectible positions along said slide rail means,

means supporting said end plate means on said frame endwise of, in alignment with, and generally paralleling respective corresponding end faces of the roll,

means for releasably supporting end-cap-forming discs between said end plate means and end faces of the roll, preparatory to applying the discs as caps to the opposed ends of the roll,

said means for releasable supporting said discs including vacuum plate means for contacting of said discs thereagainst, and aspirator means for controlling air passage through said vacuum plate means,

means for shifting said end plate means longitudinally along said frame toward the roll to engage the end-cap-forming discs and to urge the discs to abut corresponding end faces of the roll,

said means for shifting said end plate means including fluid controlled piston and cylinder means to move said end plate means selectively to approach and to recede from the ends of the roll, and valve means for fluid-flow control,

means for deforming the discs at bounding margins thereof to overlie the end faces and peripheral annular end portions of the roll to provide caps therefor,

said means for deforming the discs comprising annular flange means projecting normally of said end plate means, said flange means including a ring-like sector having a fixed internal radius substantially equal to but not less than a radius of the roll of sheet stock at ends thereof, said means for shifting said end plate means constituting means to urge said flange means against the discs and to position said ring-like sector into sleeve-like, encircling, stressing engagement over ends of the roll, to conform peripheral margins of the discs into contiguous contact with the roll at annular edge portions thereof,

said annular flange means include an annular lip integral with and flared outwardly from said ring-like sector at an inwardly-directed roll-facing extremity thereof, thereby to guide and to center said ends of the roll into and within said ring-like sector,

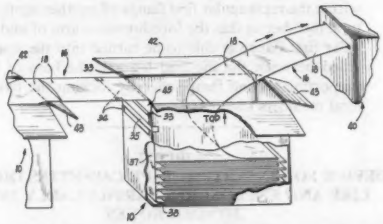
spring means resiliently supporting said annular flange means to permit shifting thereof in a plane paralleling said abutment surface of said end plate means thereby to facilitate alignment of said fixed ring-like sector with and entry of the end of a roll therewithin.

4,201,029

METHOD AND APPARATUS FOR PACKAGING

Bernard Lerner, Peninsula, and Dana J. Liebhart, Streetsboro, both of Ohio, assignors to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed Aug. 14, 1978, Ser. No. 933,424
Int. Cl.[2] B65B *5/10*
U.S. Cl. 53—429 **6 Claims**



1. A method of shipping and dispensing a web of interconnected bags each open along one face at its top comprising:

(a) feeding the bags, closed end first, into an inverted carton through an opening near the bottom of the carton;

(b) positioning the web in layers parallelng the top of the carton by feeding the web back and forth zig-zag fashion to arrange the web in layers with folds at both ends of each layer;

(c) forming alternate folds near each end of the carton first adjacent to and then spaced from the end to develop a relatively flat plicated array while allowing the weight of the web itself to compress the array;

(d) closing the bottom of the carton once filled;

(e) transporting the carton and its contents to a dispensing station and positioning the carton right side up at the dispensing station; and,

(f) dispensing the bags from the top of the carton on a first in, first out, last in, last out basis.

4,201,030

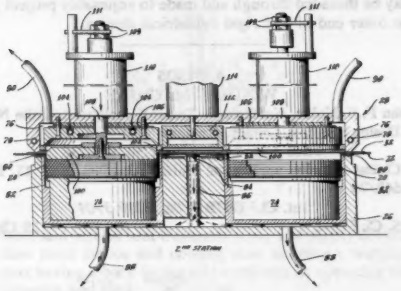
PACKAGING APPARATUS AND TECHNIQUES FOR FORMING CLOSURE TOPS

Reid A. Mahaffy, Montclair, and Walter A. Mainberger, Wayne, both of N.J., assignors to Mahaffy & Harder Engineering Co., Totowa, N.J.

Continuation of Ser. No. 822,088, Aug. 5, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,997

Int. Cl.[2] B65B *31/02*

U.S. Cl. 53—432 **26 Claims**



12. For making vacuum or gas-filled packages of the type wherein a film of packaging material, sealed to a flanged cup of packaging material containing the product, is stretched to extend into the cup in telescoping fashion to tightly grip the product within the cup; the improved method comprising the following steps:

heating the film in regions thereof to be stretched into the cup;

placing the heated film and the cup in a vacuum chamber with the film overlying the cup flanges and the cup mouth to define a complete package;

closing said chamber to seal the interior thereof from outside atmosphere;

applying vacuum to said chamber and the interior of said package to initiate evacuation thereof;

after initiating evacuation of said sealed chamber and package, moving a plug against said film while it is still hot, to stretch-form the film down into the cup to a position at least immediately adjacent the upper surface of the product therein substantially over the entire upper surface thereof;

before or after said movement of said plug, sealing said package material to provide a complete hermetic seal of said package; and

pressurizing said vacuum chamber above said film to at least substantially atmospheric pressure while said plug is pressed against said film, the pressure forcing said film tightly against the product in said cup to effect close, intimate and essentially void-free contact therebetween.

4,201,031

METHOD OF MAKING, OPENING, FILLING AND SEALING A TWO-COMPARTMENT POUCH

Jerald R. Wiles, Sarasota, Fla., assignor to Rexham Corporation, New York, N.Y.

Filed Sep. 27, 1978, Ser. No. 946,111

Int. Cl.[2] B65B *43/04*

U.S. Cl. 53—455 **2 Claims**

2. A method of making, opening, filling and sealing a pouch having two opposing side panels and having a divider panel located between the side panels and dividing the interior of the pouch into two compartments, said method comprising the steps of, advancing a web along a predetermined path, said web having a lower layer of predetermined width and having an upper layer with a width which is less than said predetermined width, said upper layer being positioned with one of its longitudinal margins adjacent one of the longitudinal margins of the lower layer, folding the web upwardly during its advance about a longitudinal line which is spaced farther from said one margin of said lower layer than from the other margin of said lower layer thereby to form two side panels and a divider panel with the top margin of a first one of said side panels and the top margin of the divider panel being located above the top margin of the second one of said side panels, sealing the side panels and the divider panel together at longitudinally spaced increments and along their bottoms to form side seals and a bottom seal, cutting through the panels between the edges of each side seal thereby to separate individual

pouches from the web, advancing the separated pouches along a predetermined path, separating the upper margin of the divider panel of each pouch from the upper margin of the first side panel of the pouch as the pouch is advanced, pulling the divider panel and the second side panel of each pouch away from the first side panel of the pouch to open one compartment of the pouch, depositing product into said one compartment, sealing the divider panel to the top margin of said first side panel to close the upper end of said one compartment, pulling the divider panel and the first side panel of each pouch away from the second side panel thereof to open the other compartment of the pouch, depositing product into said other compartment, and sealing the top margin of said second side panel to said divider panel to close the upper end of said other compartment.

4,201,032

APPARATUS FOR MAKING BUNDLES OF TEXTILE STRANDS

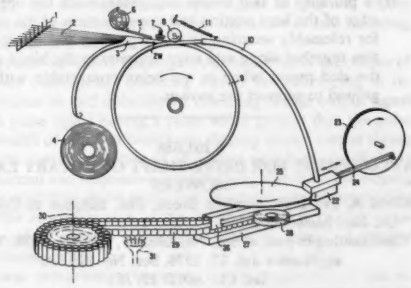
Silvio Sangalli, Caluire, France, assignor to Rhone-Poulenc-Textile, Lyon Cedex, France

Filed Feb. 16, 1978, Ser. No. 878,462

Claims priority, application France, Mar. 21, 1977, 77 08618

Int. Cl.[2] D04H *11/00, 13/00*; **D01G** *37/00*

U.S. Cl. 53—522 **19 Claims**



1. An apparatus for cutting textile strands and forming the cut strands into bundles comprising:

(a) a means for supplying and feeding the textile strands;

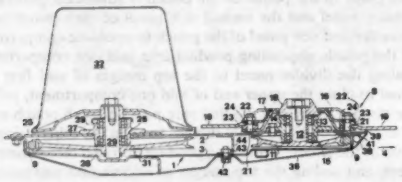
(b) means for positioning the textile strands cooperating with said means for supplying and feeding;

(c) means for gathering the strands into a parallel relation cooperating with said means for positioning;
(d) means for wrapping the parallel relation of strands cooperating with said means for gathering;
(e) means for continuously feeding the wrapped, parallel relation of strands cooperating with said means for wrapping, said means for continuously feeding including a rotating capstan around which the textile strands are wound and a flexibly supported accumulator pipe connected to the capstan;
(f) means for cutting the wrapped, parallel relation of textile strands to form a bundle of strands having top ends and bottom ends cooperating with said means for continuously feeding; and
(g) means for joining the bottom ends of the bundle of strands connected to said means for cutting.

4,201,033
DISC MOWERS

Nigel W. Meek, Madges, Long Crendon; John Robb, Myitkyina, Main St., Grendon Underwood, and James A. Munro, 39 Elm Trees, Long Crendon, all of Aylesbury, Buckinghamshire, England

Filed Aug. 16, 1978, Ser. No. 934,246
Claims priority, application United Kingdom, Aug. 18, 1977, 34640/77
Int. Cl.[2] A01D *55/26, 55/18*
U.S. Cl. 56—13.6 **13 Claims**



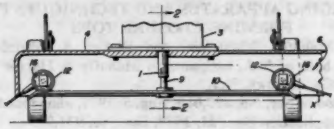
1. A disc mower comprising:
(a) a casing of generally elongate shape and when in the operative position extending generally transverse to the intended direction of operative travel;
(b) at least one pair of rotatable cutter discs mounted on top of the casing and operably extending therewithin;
(c) at least one generally radially-extending knife carried by each cutter disc at the periphery thereof;
(d) a transmission belt housed within the casing and co-operable with said cutter discs for driving operation thereof;
(e) said casing comprising a base portion and an upper portion hingedly connected together along one edge and
(f) a plurality of skid means engageable with the opposite edge of the base portion and upper portion of the casing for releasably securing said base portion and upper portion together along said edge opposite to the hinge edge, the skid means when in use being contactable with the ground to support the mower.

4,201,034
ATTACHMENT FOR DRIVE SHAFT OF ROTARY LAWN MOWERS

Alfred A. Frantello, Satellite Beach, Fla., assignor to Corinth Co. Inc., Melbourne, Fla.

Continuation-in-part of Ser. No. 880,987, Feb. 24, 1978. This application Jul. 17, 1978, Ser. No. 925,530
Int. Cl.[2] A01D *55/18*
U.S. Cl. 56—295 **3 Claims**

1. An attachment for the drive shaft of a rotary lawn mower comprising, in combination, a transversely extending element adapted for rotation and having centrally disposed means for enabling its attachment to the end of the drive shaft of the rotary lawn mower, a pair of rigid cylindrical sleeves secured to the most distantly spaced portions of said transversely extending element, a longitudinally compressible spool disposed in each of said distantly spaced rigid cylindrical sleeves of a supply of flexible cutting line carried by each of said spools,

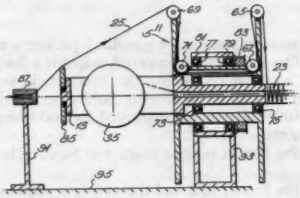


each of said rigid cylindrical sleeves having at least one aperture in the side-wall thereof whereby the outer end of said line may be threaded through and made to adjustably project from the outer end of said rigid cylindrical sleeves.

4,201,035
WINDING MACHINE

John P. S. Nolan, Northwood, England, assignor to John Nolan Design Limited, London, England

Filed Aug. 7, 1978, Ser. No. 931,733
Claims priority, application United Kingdom, Aug. 11, 1977, 21642/76
Int. Cl.[2] D07B *7/06;* **B21F** *3/04*
U.S. Cl. 57—6 **20 Claims**



1. A winding machine for winding a filament on a mandrel, the winding machine comprising means for feeding the filament substantially along an axis of rotation, a single winding element which is rotatable about said axis of rotation, said winding element having one or more guide means for entraining the filament in a radial loop, said loop extending substantially from said axis of rotation to said guide means on one side of said axis only and rotating about said axis when said winding element is rotated; means for removing turns of the filament from the mandrel; restraining means to prevent rotation of said mandrel, and means for supplying a binding or positioning element longitudinally of the mandrel, the binding or positioning element being provided for binding or positioning turns of the filament which are wound on and subsequently removed from the mandrel, said means for supplying the binding or positioning element being located on an extension of the mandrel outside the zone of rotation of said winding element but within the zone of rotation of said radial loop.

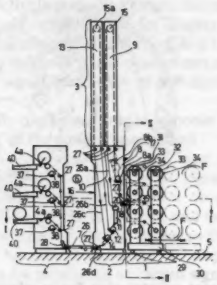
4,201,036
FALSE TWIST MACHINE

Hans Schellenberg, Winterthur; Eduard Schenkel; Andreas Schwander, both of Seuzach, and Dieter Thalmann, Winterthur, all of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Aug. 21, 1978, Ser. No. 935,110
Claims priority, application Switzerland, Jan. 3, 1978, 2195/78
Int. Cl.[2] D02G *1/02;* **D01H** *13/28*
U.S. Cl. 57—291 **16 Claims**

1. A false twist machine for textile thread comprising
a creel for a plurality of bobbins;

a texturizing station having a first supply device for taking in a thread from said creel, a first heat treatment zone located above said first supply device to receive the thread from said first supply device, a cooling zone below said heat treatment zone to cool the thread, a false twist device below said cooling zone for the thread, a second supply device for taking the thread from said false twist device, a second heat treatment zone adjacent said first heat treatment zone to receive the thread from said second supply device, and a third supply device for taking the thread



from said second heat treatment zone, said supply devices, false twist device and cooling zone defining a texturing part having a back facing said creel and an operating side opposite said back;

a thread transfer device for guiding the thread from said creel into the immediate vicinity of said first supply device; and

a winding apparatus for receiving the thread from said third supply apparatus, said winding device having an operating side facing said operating side of said texturing part in spaced relation to define an operating alley therebetween.

4,201,037

METHOD AND APPARATUS FOR CLEANING FIBROUS MATERIAL

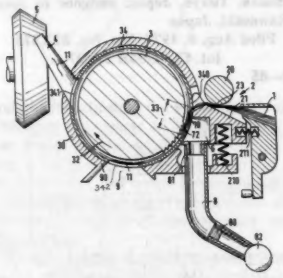
Peter Artzt, Pfullingen; Rudolf Hehl, Albstadt; Gerhard Egbers, Reutlingen, and Anton Schenek, Bempflingen, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,708

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 2648715

Int. Cl.² D01H *11/00, 1/12*

U.S. Cl. 57—301 **11 Claims**



1. A method of cleaning fibrous material which is fed in the form of a sliver to an opening roller and is opened by said opening roller into individual fibers and subsequently fed to an open-end spinning device, said method comprising:

simultaneously subjecting said fibrous material to the action of the opening roller and to a flow of air sucked outwards with respect to the opening roller while said fibrous material is carried in the direction circumferential to the opening roller, and subjecting said flow of air to said fibrous material while said fibrous material is still retained as a fiber tuft.

4,201,038

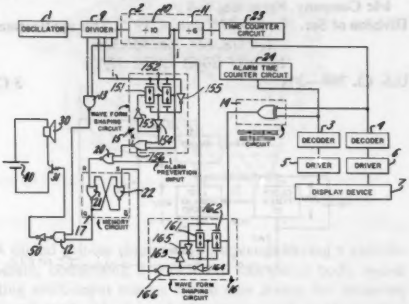
ALARM ELECTRONIC WATCH

Kenichi Kondo, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Apr. 25, 1978, Ser. No. 900,005

Int. Cl.² G04C *21/34, 21/38*

U.S. Cl. 368—73 **4 Claims**



1. An electronic alarm watch comprising, in combination:

means for developing a repetitive time standard signal having a repetition rate defining passage of time;

a dividing circuit receptive of said time standard signal for dividing the same and for developing repetitive output signals having respective repetition rates less than the repetition rate of said time standard signal;

a counting circuit receptive of one of the output signals of said dividing circuit for counting the output signal and for developing a count representative of the passage of time;

a first waveform shaping circuit receptive of the output signal of said counting circuit and a higher repetition rate output signal of said dividing circuit for developing a pulse signal at a repetition rate equal to that of said counting circuit output signal and having a pulse width equal to that of said dividing circuit output signal;

a coincidence detecting circuit for detecting when the count of said counting circuit and an alarm time signal coincide and for developing an output signal in response to the detected coincidence between the count of said counting circuit and said alarm time signal;

a second waveform shaping circuit receptive of the output of said coincidence detecting circuit for developing in response to said coincidence detecting circuit output signal a pulse signal having a pulse width greater than the pulse width of said first waveform shaping circuit output signal;

alarm means receptive of an output signal of said dividing circuit and responsive to an enabling signal for developing a repetitive alarm signal at a repetition rate determined by the repetition rate of the dividing circuit output signal applied thereto when said enabling signal is applied thereto; and

means comprising a memory circuit responsive to the respective output signals of said first and second waveform shaping circuits for applying said enabling signal to said alarm means in response to the output of said second waveform shaping circuit so that detection of coincidence between the count developed by said counting circuit and said alarm time signal is effective to enable said alarm

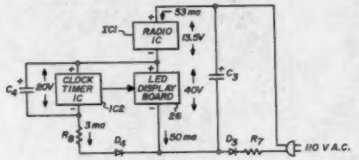
means, and for terminating said enabling signal in response to the output of said first waveform shaping circuit so that said alarm signal is terminated within a predetermined time equal to the repetition rate of said first waveform shaping circuit output signal.

4,201,039

NUMERICAL DISPLAY USING PLURAL LIGHT SOURCES AND HAVING A REDUCED AND SUBSTANTIALLY CONSTANT CURRENT REQUIREMENT

Roland M. Marion, LaFayette, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 803,574, Jun. 6, 1977. This application Nov. 1, 1978, Ser. No. 956,536
Int. Cl.[2] G04B *19/30, 37/12*
U.S. Cl. 368—241 **3 Claims**



1. A transformerless clock radio comprising:

(1) an LED time display having four character display sites for displaying minutes, tens of minutes, hours and tens of hours, the first three of said display sites each containing seven light emitting diodes at positions "a" to "g" respectively on a vertically elongated parallelogram with a central horizontal bar, said positions being identified as follows:

(2) a light emitting diode energization network for said four display sites having polarized first and second input terminals, each of three display sites having four mutually parallel energization branches connected between said input terminals, each branch including a current stabilizing means, one to three forward poled, serially connected light emitting diodes designed to be selectively de-energized by shunt switches, said energization network having a predetermined voltage requirement and a current requirement for the said three sites substantially equal to twelve times that of a light emitting diode at maximum design brightness irrespective of the characters displayed or the operating brightness,

(3) an integrated radio circuit having a predetermined voltage requirement and a current requirement approximating that of said diode energization network, and

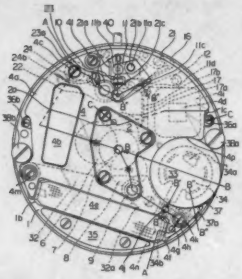
(4) a dc power supply energized from an ac main comprising a half wave rectifier, a voltage dropping resistor and a filter capacitor between whose output terminals said diode energization network and said radio integrated circuit are serially connected for energization, said dc power supply having an output voltage substantially equal to the sum of said voltage requirements at a current adequate for said energization network and said radio integrated circuit.

4,201,040

WATCH MOVEMENT CONSTRUCTION

Yasuaki Nakayama, Hanno, Japan, assignor to Citizen Watch Co., Ltd., Japan

Filed Apr. 13, 1978, Ser. No. 896,146
Claims priority, application Japan, Apr. 15, 1977, 52-42526
Int. Cl.[2] G04B *19/24, 33/00*
U.S. Cl. 368—35 **3 Claims**



1. A movement construction for an electronic wristwatch powered by a battery having a reduced diameter portion comprising:

a base plate;

a reduction wheel train mechanism provided at a central portion of said base plate;

a time dial mounted on one surface of said base plate;

a circuit board mounted on another surface of said base plate and having a cutout formed at a position near an outer circumference of said movement construction to accommodate said battery in a fixed place such that a circumferential periphery of said battery is partially aligned with the outer circumference of said movement construction; and

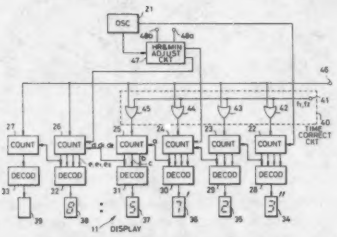
a calendar display member disposed between the front surface of said base plate and said time dial and having its center displaced from the central portion of said base plate so that a line passing through a center of said battery, a center of said base plate and a center of said calendar display member makes an obtuse angle whereby said calendar display member and said battery are substantially out of overlapping state to reduce the thickness of said movement construction.

4,201,041

DIGITAL ELECTRONIC TIMEPIECE HAVING A TIME CORRECTING MEANS

Toyonaru Tanaka, Tokyo, Japan, assignor to Jeco Company Limited, Kawasaki, Japan

Filed Aug. 5, 1977, Ser. No. 822,375
Int. Cl.[2] G04B *27/00*
U.S. Cl. 368—85 **3 Claims**



1. A digital electronic timepiece comprising:

oscillator means for generating reference clock-pulse signals;

a plurality of counter means of successive stages for successively counting the reference clock-pulse signals and respectively producing output signals for displaying numerals at respective digit positions for seconds, tens of seconds, minutes, tens of minutes, hours, and tens of hours, said counter means exclusive of the first-stage counter means being arranged in cascade connection for counting operation initiated by carry signals from the counter means of respectively preceding stages, the counter means for producing an output signal for display at the digit position for tens of minutes supplying as a carry signal a signal of a duty ratio of $\frac{1}{3}$ to the counter means for producing an output signal for display at the digit position for hours;

means for digitally displaying time in response to signals for output display of the counter means; and

means for supplying a time correction reset signal to the counter means for producing as output signals for display at the digit positions respectively for seconds, tens of seconds, minutes, and tens of minutes, said time correction reset signal resetting the counter means so that the output signal thereof becomes a signal for "0" display, and said counter means for producing an output signal for display at the digit position for tens of minutes operating, when supplied with said reset signal in the time interval from (n−1) hours 40 minutes to n hours 40 minutes, to produce as output a signal for causing the counter means for outputting the signal for display at the digit position for hours to produce an output signal for displaying n hours.

4,201,042

REGULATOR FOR A TIMEPIECE MOVEMENT

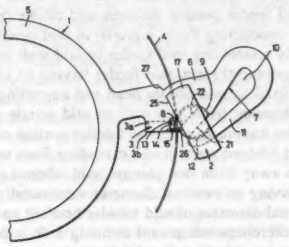
Gérald Visconti, Bellach, and Beat Gilomen, Biel, both of Switzerland, assignors to A. Schild S.A., Grenchen, Switzerland

Filed May 1, 1978, Ser. No. 901,810

Claims priority, application Switzerland, May 12, 1977, 5983/77

Int. Cl.² G04B *17/13*

U.S. Cl. 368—170 **8 Claims**



1. In a regulator for adjusting the active length of a balance-spring in a timepiece movement, of the type having an annular portion to be fitted on said movement coaxially with said balance-spring, a lug having a cut-out portion and an opening into said cut-out portion, and a first limiting member fitted in said cut-out portion and held rotatably adjustable about an axis parallel to the axis of rotation of said regulator, the improvement which comprises:

a second limiting member disposed opposite said first limiting member and formed by an integral lateral portion of said lug bent in a rounded bend, about a line running towards said opening, into a plane parallel to the axis of rotation of said regulator, and

at least two straight, parallel, projecting banking elements respectively forming part of said first and said second limiting member, said banking elements being visible between said opening and said rounded bend when viewed at right angles in the dial-down position of said movement.

4,201,043

WRISTWATCH CALCULATOR IMPUT KEY POSITIONING ASSEMBLY

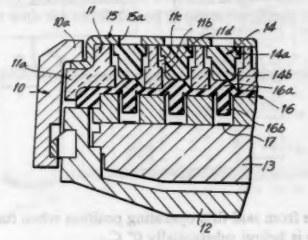
Yasutaka Tarusawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jul. 21, 1977, Ser. No. 817,779

Claims priority, application Japan, Jul. 16, 1976, 51-94852[U]

Int. Cl.² H01H *9/00*; G04C *3/00*

U.S. Cl. 368—10 **8 Claims**



4. A digital display electronic wristwatch having a calculator therein, comprising a watch and calculator body means including multi-input means; watch case means for receiving said watch and calculator body means and a cover glass mounted in said watch case means including at least two stepped openings therethrough; each stepped opening formed with a larger portion and a smaller portion and positioned in registration with an input of said multi-input means; the larger portion of said stepped openings formed on the outer surface of said cover glass; a panel formed with at least two openings of smaller size than said larger portion of said stepped openings and positioned on said cover glass so that each said panel opening is in registration with and partially closes the larger portion of a stepped opening through said cover glass; a key member formed with a flange and mounted for displacement in each of said watch case means stepped openings, said flange having a lateral dimension larger than a corresponding lateral dimension of said smaller portion of said stepped opening and being dimensioned for receipt in the larger portion thereof; and a unitary resilient packing sheet means for biasing said key to a first position away from said multi-input means by the displacement of said key members through said openings to effect selective actuation of said multi-input means.

4,201,044

FUEL SYSTEMS FOR GAS TURBINE ENGINES

Alec G. Dodd, Belper, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 22, 1978, Ser. No. 888,992

Claims priority, application United Kingdom, Mar. 31, 1977, 13599/77

Int. Cl.² F02G *3/00*

U.S. Cl. 60—39.09 R **5 Claims**

1. A fuel system having a main fuel flow for a gas turbine engine, said fuel system comprising:

two filter means;

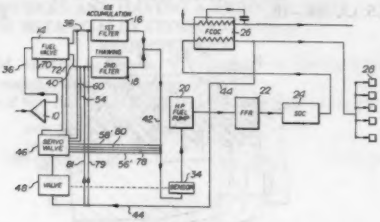
a spool valve means for receiving and passing the main fuel flow to said two filter means, said spool valve means having three operating positions, a first operating position in which the main fuel flow is delivered to both said filter means, and second and third operating positions in which the main fuel flow is delivered to only one of said two filter means respectively;

a supply of pressurized fuel operatively connected to said

spool valve means for moving the same to its operating positions;

a second valve means controlling the supply of pressurized fuel to said spool valve means;

temperature sensor means for sensing the temperature of fuel downstream of the filter means, said temperature sensor means being connected to means for controlling the flow of pressurized fuel to said second valve means to cause said second valve means to deliver pressurized fuel to said spool valve means to cause said spool valve means to



move from said first operating position when fuel temperature is below substantially 0° C.;

pressure sensing means for sensing the inlet fuel pressure to each of said filter means and the outlet fuel pressure from each of said filter means, said pressure sensor means being operatively connected to said second valve means to cause the second valve means to move said spool valve means between said second and third positions when a predetermined quantity of ice has accumulated in the filter means in use;

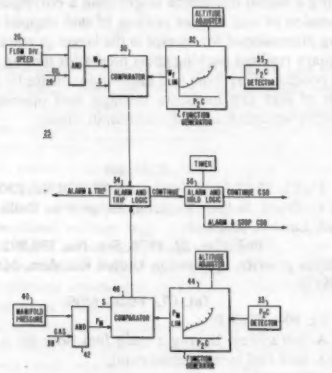
and means for thawing accumulated ice in said filter means.

4,201,045

FUEL LIMITER FOR COMBUSTION TURBINES

Elo N. Vani, Cherry Hill, N.J., and Roy W. Kiscaden, Morton, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 21, 1978, Ser. No. 935,430
Int. Cl.[2] F02C 9/04
U.S. Cl. 60—39.09 R **6 Claims**



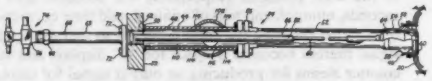
1. A fuel limiter for a combustion turbine fuel valve control comprising means for generating a signal representative of the combustor shell pressure, means for generating a signal representation of the rate at which fuel is being supplied to the turbine, means for generating a fuel limit as a function of the combustor shell pressure, means for comparing the fuel signal and the fuel limit, and means for generating at least one control signal when the fuel signal and fuel limit are related to each other in a predetermined manner.

4,201,046

BURNER NOZZLE ASSEMBLY FOR GAS TURBINE ENGINE

Michael A. De Negris, Wolcott, and Philip Lees, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,677
Int. Cl.[2] F02C 7/22
U.S. Cl. 60—39.37 **10 Claims**

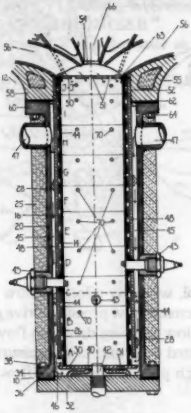


1. In an axial flow gas turbine engine having a combustion section, the combination comprising: means defining a plenum for said combustion section, at least one burner can in said plenum having a forward end with a nozzle opening, said plenum defining means including a wall spaced forwardly of said burner can and having a nozzle opening aligned with said nozzle opening of said burner can, and a nozzle assembly for injecting fluent materials into said burner can through said nozzle opening thereof, said nozzle assembly including a tubular housing in said plenum fixed to said wall and extending from said wall to said burner can, said tubular housing having a bore communicating with both of said nozzle openings and having a straight central axis generally colinear with the axis of said nozzle openings, a nozzle head slidably received in said tubular housing in the vicinity of said nozzle opening of said burner can for spraying fluent material into said burner can, an elongated feeder passing through said nozzle opening in said wall for conducting fluent material to said nozzle head, means releasably connecting said feeder to said wall and sealing said nozzle opening therein, said feeder having an inboard tubular portion fixed to said nozzle head and extending through said tubular housing from said wall to said nozzle head and said feeder also having an outboard tubular portion communicating with said inboard portion and extending from said wall in the direction away from said plenum, said inboard portion of said feeder having an external diameter substantially smaller than the internal diameter of said tubular housing so as to define a passage therebetween, means defining a flow path for fluent material past said nozzle head from said passage to the interior of said burner can, a first fluent material supply conduit, means releasably connecting said first fluent material supply conduit to said outboard portion of said feeder to supply a first fluent material to said feeder, and another fluent material supply conduit passing through and fixed to said wall and communicating with said passage between said inboard feeder portion and said tubular housing to supply another fluent material from outside said plenum to said passage, said nozzle head having a cross-sectional shape smaller than that of the bore of said tubular housing and of said nozzle opening in said wall so that when said means releasably connecting said feeder to said wall and said means releasably connecting said first fluent material supply to said outboard portion of said feeder are released said feeder and said nozzle head may be removed by withdrawing them axially from said tubular housing through said nozzle opening in said wall.

4,201,047
LOW EMISSION COMBUSTORS

Glenn B. Warren, 1361 Myron St., Schenectady, N.Y. 12309, and J. Randolph Morgan, 13248 N. Avenue Victor Hugo, Phoenix, Ariz. 85032

Continuation of Ser. No. 694,907, Jun. 10, 1976, abandoned.
This application Apr. 4, 1978, Ser. No. 893,451
Int. Cl.[2] F02G 3/02; F02B 19/02
U.S. Cl. 60—39.63 10 Claims



1. A low emission prime mover system including an external combustion engine having an intake portion and an exhaust portion; and a combustor, comprising:

(a) a plurality of concentric shells including a flame tube having an inlet end and an exit end, said exit end being connected in fluid communication with said intake portion;

(b) primary means, including a primary fuel and air supply system having fuel and air inlet openings at said inlet end, for establishing thereat a helically swirling, fuel-rich primary combustion flame;

(c) air passage means between said concentric shells and extending about and along the length of said flame tube for

(1) regeneratively cooling said flame tube and the primary combustion flame therein, and

(2) conveying selected amounts of regeneratively heated air to said flame tube in a helically swirling motion at a plurality of regions intermediate said inlet and exit ends to cool the combustion products of said flame and provide for secondary combustion of any unburned fuel supplied by said primary fuel supply means;

(d) secondary means including a secondary fuel and air supply system having fuel and air inlet openings at said exit end; and

(e) automatic fuel control means for regulating fuel flow to said primary means in a quantity less than that required for full load operation, and for regulating the fuel flow to said secondary means in a continuous flow as required to achieve a desired higher load operating condition without subjecting the inlet end of said flame tube to the otherwise high temperature, heavy combustion load, and resulting production of NO_x.

4,201,048
EXHAUST SYSTEM CONNECTOR

Roy G. Fisher, 3965 Newport St., Denver, Colo. 80207, and Michael S. Fisher, 6521 S. Logan, Littleton, Colo. 80121

Filed Oct. 13, 1977, Ser. No. 841,615
Int. Cl.[2] F01N 7/00; F16L 27/12
U.S. Cl. 60—322 3 Claims

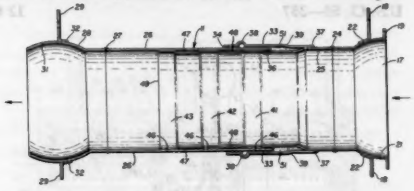
1. In a connector for use on the exhaust system of internal combustion engines to provide a pressure tight seal between components of such systems that are subjected to differential movement patterns including:

telescopically interfitting inner and outer circular sleeves;

means joining the inner of said sleeves to a first upstream component of the exhaust system,

means joining the outer of said sleeves to a downstream or outlet component of said exhaust system, whereby gases from said engine are delivered interiorly of said sleeve connector for flow toward the downstream component, the improvement which comprises:

(a) a circular pressure collar having one contracted end interconnected with the inner sleeve and interconnected by a sleeve abutting shoulder with the remainder of a diameter greater than the external diameter of the outer sleeve with the terminal end of the outer sleeve telescoped



in the pressure collar through the uncontracted end, and having a roll bead adjacent the uncontracted end providing concentricity thereof,

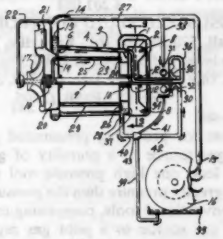
(b) a plurality of longitudinally spaced ribs formed on one of the inner and outer sleeve providing a plurality of circumferential, short cylindrical, axially flat, contact areas with the cylindrical surface of the outer sleeve, which areas are less than the total circumferential axial area between the two telescoped sleeves, providing reciprocal and rotational motion between the two sleeves while maintaining contact therebetween at said contact areas,

(c) there being spaced chambers between said ribs for the entrapment of exhaust gases that have passed any upstream rib area providing reduced differential pressures from chamber to chamber.

4,201,049
TURBINE POWER PLANT

Arno W. Tobber, 1010 Sixth Ave., Dorval, Quebec, Canada

Filed Nov. 29, 1978, Ser. No. 964,810
Int. Cl.[2] F16D 33/00
U.S. Cl. 60—325 10 Claims



1. A turbine power plant comprising a fuel combustion unit operatively producing combustion gas under pressure, combustion gas outlet means including at least one tubular gas outlet connected in communication with said combustion unit, an auxiliary liquid supply communicating with said tubular gas outlet and producing spaced-apart slugs of auxiliary liquid in the outward flow of combustion gas in said tubular gas outlet, said slugs accelerating while in said tubular gas outlet by the

expansion of the combustion gas therein, a collector manifold connected to said tubular gas outlet and operatively receiving the accelerated slugs of auxiliary liquid, and an impeller device connected to said collector manifold and operatively driven by said auxiliary liquid.

4,201,050

FLUID COUPLING

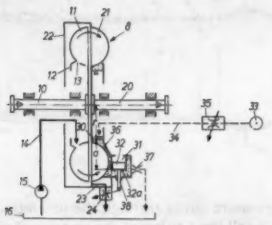
Fritz Nixel, Grimmschwinden, Fed. Rep. of Germany, assignor to Voith Turbo GmbH & Co., KG, Crailsheim, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,277

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757252

Int. Cl.[2] F16D *33/06*

U.S. Cl. 60—357 **12 Claims**



1. A rotating fluid coupling comprising:

a primary coupling half and a secondary coupling half which together form a working chamber which can be filled with working fluid;

a control device connected with said secondary coupling half for rotating therewith and for regulating the rotary take-off drive speed of said coupling; said control device including comparing means for comparing an operating value, which depends on the rotary take-off drive speed, with a variable command value, and for initiating adjustment of the rotary take-off drive speed when the operating value differs from the command value;

said control device comprising a fluid container which rotates with said secondary coupling half; said comparing means communicating with the fluid in said fluid container for being adjusted thereby; a line for delivering control fluid to said fluid container; an outlet opening from said fluid container at a radial distance from the axis of rotation of said coupling.

4,201,051

PRESSURIZED FLUID CONTROL CIRCUIT

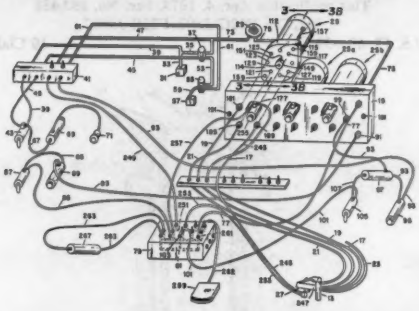
Arthur L. Hall, 520 Bardon Rd., Knoxville, Tenn. 37919

Continuation-in-part of Ser. No. 722,609, Sep. 13, 1976, Pat. No. 4,145,813. This application Dec. 4, 1978, Ser. No. 965,787

Int. Cl.[2] F15B *11/06*

U.S. Cl. 60—407 **5 Claims**

1. A system for providing pressurized gas from a single pressurized gas source to a plurality of gas-powered tools, including at least one high pressure tool requiring gas at a substantially greater pressure than the pressure required for the remaining conventional tools, comprising conduit means connecting said gas source to a pilot gas regulator, individual conduit means connecting said pilot gas regulator to a plurality of individual switches, each one of said individual conduit means connecting each of said switches to a control air inlet of one of a plurality of actuating valves, each actuating valve being associated with one of said tools, conduit means connecting said gas source to a low pressure drive gas regulator, low pressure drive gas conduit means connecting said low pressure drive gas regulator to each of said actuating valves, conduit means connecting said actuating valves associated with said conventional tools to said conventional tools, conduit means connecting said pressurized gas source to a high pressure inlet of a relay valve, conduit means connecting the drive gas outlet of the actuating valve associated with said high pressure tool to a low pressure inlet of said relay valve and conduit means connecting a high pressure outlet of said relay valve to said



high pressure tool, whereby pilot gas flow to each individual actuating valve actuates low pressure drive gas flow from each of said valve and low pressure drive gas flow from said equivalent valve associated with said high pressure tool to said relay valve actuates high pressure drive gas flow to said high pressure tool.

4,201,052

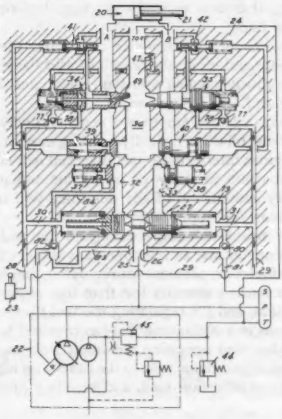
POWER TRANSMISSION

Robert H. Breeden, Metamora; Robert G. Farrell, Ortonville, and Henry D. Taylor, Pontiac, all of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed Mar. 26, 1979, Ser. No. 24,058

Int. Cl.[2] F16H *39/46*; F15B *11/16*

U.S. Cl. 60—445 **40 Claims**



12. For use in hydraulic control system comprising a hydraulic actuator having opposed openings adapted to alternately function as inlets and outlets for moving the element of the actuator in opposite directions, and a variable displacement pump with load sensing control for supplying fluid to said actuator,

a meter-in valve to which the fluid from the pump is supplied,

said valve being pilot controlled,

a pair of lines extending from said meter-in valve to the respective openings of an actuator,

a meter-out valve associated with each line to the actuator for controlling the flow out of said actuator,

each said meter-out valve being adapted to be pilot operated by the pilot pressure from a pilot controller.

4,201,053

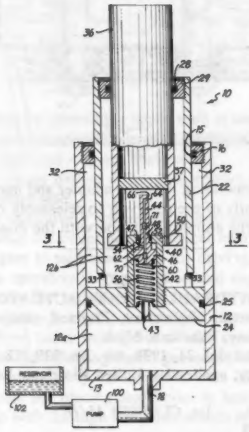
TELESCOPIC CYLINDER AUTOMATIC SYNCHRONIZER

Richard E. Atkey, Memphis, Tenn., assignor to Dover Corporation, Memphis, Tenn.

Filed Nov. 6, 1978, Ser. No. 957,832

Int. Cl.² F15B *15/16*

U.S. Cl. 60—459 **6 Claims**



1. In a telescopic hydraulic cylinder apparatus comprising a base cylinder closed at its lower end, at least one intermediate cylinder, and a piston rod extending outwardly from the upper end of said main cylinder, a piston secured to the inner end of the innermost intermediate cylinder dividing said main cylinder into a lower chamber between said piston and said lower end, and an upper chamber between said piston and said upper end, means for supplying hydraulic fluid under pressure into said lower chamber, and flow means for permitting fluid to flow in one direction only from said lower chamber into said upper chamber, the improvement wherein said flow means comprises a compensator pump means, said piston rod arranged so as to engage selectively said pump means at certain operating states of said apparatus, said pump means including means for permitting fluid to flow from said lower chamber into said pump means when said piston rod engages said pump means, and for pumping said fluid within said pump means into said upper chamber when said piston rod is moved out of engagement from said pump means.

4,201,054

HYDRAULIC MASTER CYLINDER

Wilfred Bainbridge, Banbury, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Jun. 9, 1978, Ser. No. 914,042

Claims priority, application United Kingdom, Jun. 17, 1977, 25342/77

Int. Cl.² B60T *11/20*

U.S. Cl. 60—562 **5 Claims**

1. A master cylinder for a motor vehicle split hydraulic braking system having disc brakes for acting on one set of wheels and drum brakes for acting on another set of wheels, the master cylinder comprising:

a housing body;

first and second bore portions in the housing body;

a first piston slidable in the first bore portion and a second piston slidable in the second bore portion;

a first chamber in the housing body for connection to the drum brakes and which in use is pressurized by the first piston;

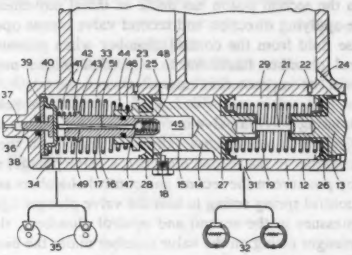
a second chamber in the housing body for connection to the disc brakes and which in use is pressurized by the second piston;

a blind bore in one of said pistons;

a control piston connected to said housing body;

said control piston slidably positioned in said blind bore;

a control chamber in said one piston defined by the blind bore and the control piston, pressure in the control chamber acting to retard movement of the second piston in the brake-applying direction;



first valve means operable to trap a quantity of hydraulic fluid in the control chamber, and second valve means operable to release fluid from the control chamber, the arrangement being such that after an initial movement of the second piston in the brake-applying direction the first valve means operates to allow the control piston to pressurize the control chamber and prevent a substantial increase in the pressure in the second chamber until the pressure in the first chamber has risen to a predetermined magnitude to cause further movement of the second piston at which the second valve means operates to reduce pressure in the control chamber to allow movement of the second piston to increase pressure in the second chamber.

4,201,055

HYDRAULIC MASTER CYLINDER

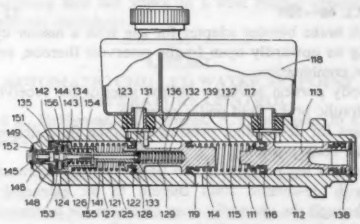
Wilfred N. Bainbridge, Banbury, and David Parsons, Kenilworth, both of England, assignors to Automotive Products Limited, Leamington Spa, England

Filed Aug. 15, 1978, Ser. No. 933,880

Claims priority, application United Kingdom, Aug. 18, 1977, 34757/77

Int. Cl.² B60T *11/20*

U.S. Cl. 60—562 **3 Claims**



1. A master cylinder for a motor vehicle split hydraulic

braking system having disc brakes for acting on one set of wheels and drum brakes for acting on another set of wheels, the master cylinder comprising a housing body, first and second bore portions in the housing body, first and second pistons slidable in said first and second bore portions respectively, a first chamber in the housing body for connection to the drum brakes and which in use is pressurized by the first piston, a second chamber in the housing body for connection to the disc brakes and which in use is pressurized by the second piston, a blind bore in one of said first and second pistons, a control piston connected to said housing body, the control piston being slidable in said blind bore, a control chamber in said one piston defined by the blind bore and the control piston, pressure in the control chamber acting to retard movement of the second piston in the brake applying direction, first valve means operable to trap a quantity of hydraulic fluid in the control chamber when the second piston has made an initial movement in the brake-applying direction and second valve means operable to release fluid from the control chamber when pressure in the control chamber has risen to a predetermined magnitude, wherein the improvement comprises:

said first valve means comprises a first valve seat in the housing body, a valve member for co-operation with said first valve seat to close communication from the control chamber to the second chamber, a valve plunger movable by pressure in the second and control chambers and a first control spring acting to bias the valve plunger against the pressure in the second and control chambers, the valve plunger acting on the valve member under the bias of said first control spring to unseat the valve member from said first valve seat;

and said second valve means comprises a second valve seat on the valve plunger which co-operates with the valve member to prevent communication from the control chamber to the second chamber and a second, preloaded, control spring which acts between the valve member and the valve plunger to seat the valve member on said second valve seat, the valve plunger being further movable by the pressure in the second and control chambers against said second control spring to unseat the valve member from said second valve seat.

4,201,056

BRAKE BLEEDER ADAPTER

David L. De Martelaere, Troy, and William E. Bogard, Sterling Heights, both of Mich., assignors to Kent-Moore Corporation, Mich.

Filed May 1, 1978, Ser. No. 901,593

Int. Cl.[2] B60T *11/30*; F15B *7/10*

U.S. Cl. 60—584 **12 Claims**

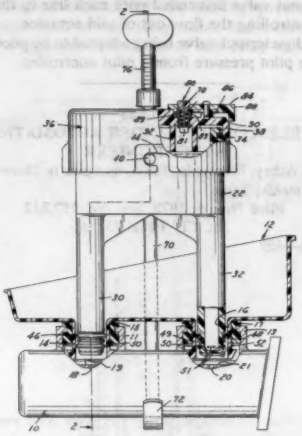
1. A brake bleeder adapter for use with a master cylinder having an upwardly open fragile reservoir thereon, comprising, in combination:

a body portion having a hollow interior for receiving hydraulic brake fluid under pressure,

means for de-aerating pressurized brake fluid delivered to the body portion,

a hollow leg portion on the body portion communicating with de-aerated fluid therein to be extended down through the upwardly open reservoir for communication with the master cylinder essentially independent of the reservoir,

means for removably sealing the leg portion in the aforesaid relation to the master cylinder, and



means for cooperating with the adapter and master cylinder independently of the reservoir to releasably retain the leg portion in the aforesaid relation with the master cylinder.

4,201,057

AIR HYDRAULIC BRAKE ACTUATOR

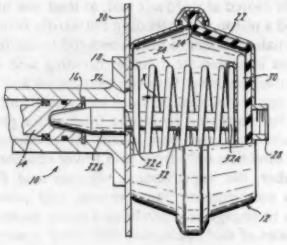
Terence A. Martin, Chelmsford, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 31, 1978, Ser. No. 929,752

Claims priority, application United Kingdom, Aug. 31, 1977, 36275/77

Int. Cl.[2] F15B *15/18*

U.S. Cl. 60—593 **1 Claim**



1. An air/hydraulic actuator for a vehicle braking system, comprising a hydraulic master cylinder having a bore open at one end and adapted for mounting adjacent the open end of the bore to one face of a vehicle member, a piston slidable in the bore, a stop in the cylinder for limiting movement of the piston in one direction, a pneumatic actuator adapted to be mounted to an opposite face of the vehicle member and including a push rod engagable with the piston to move it away from the stop on application of compressed air to the actuator, the push rod normally being biased away from the piston, the push rod extending in use through an aperture in the vehicle member and being formed with a stop surface engageable with said one face of the vehicle member;

said stop surface being in the form of an annular shoulder at right angles to the longitudinal axis of the push rod; and

a vehicle member having an aperture for passage of the push rod, the aperture being elongate with a narrow portion dimensioned to engage said stop surface and a broad

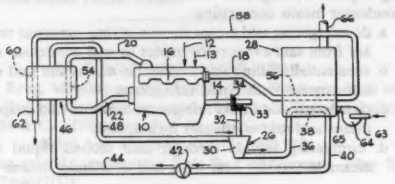
portion dimensioned to permit the stop surface to pass therethrough during assembly and disassembly.

4,201,058

METHOD AND APPARATUS FOR GENERATING STEAM

Raymond C. Vaughan, 135 E. Main St., Hamburg, N.Y. 14075

Division of Ser. No. 655,477, Feb. 5, 1976, Pat. No. 4,087,974.
This application Oct. 25, 1977, Ser. No. 844,877
Int. Cl.² F01K *23/10*
U.S. Cl. 60—618 **9 Claims**



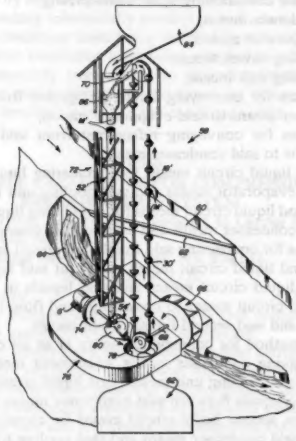
1. Apparatus for generating vapor such as steam comprising:
(a) an internal combustion engine having a mechanical energy output and a waste heat output;
(b) a heat pump having a low temperature side and a high temperature side;
(c) means operatively connected to said engine and to said heat pump for coupling mechanical energy output from said engine to said heat pump for driving said pump;
(d) means operatively connected to said engine and to said heat pump for transmitting waste heat output from said engine to the low temperature side of said heat pump;
(e) an unfired boiler having an inlet for receiving water and an outlet for releasing steam generated in said boiler and
(f) means operatively connected to said heat pump and to said boiler for placing said boiler in heat exchange relationship with the high temperature side of said heat pump.

4,201,059

HYBRID ENERGY CONVERTOR

Hubert C. Feder, 1517 Roosevelt Ave., Alamogordo, N. Mex. 88310

Filed Oct. 26, 1977, Ser. No. 845,781
Int. Cl.² F03G *3/04*
U.S. Cl. 60—639 **7 Claims**



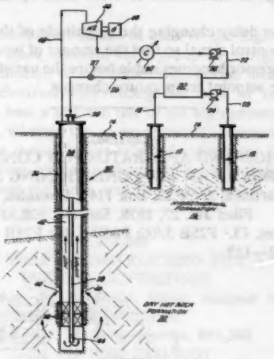
1. A method of energy transmission which changes the energy in both form and substance wherein the output speed is constant regardless of the input speed so long as the input torque is equal to or greater than the output torque, comprising the steps of:
(a) translating an input kinetic energy of a variable velocity into a potential energy of a predetermined height by raising a plurality of substantially equal masses to said height and channeling the masses directly to a free fall location without providing for storage of the masses;
(b) translating the potential energy into an output kinetic energy of a constant velocity which is a function of the height of the potential energy and independent of the velocity of the input kinetic energy by allowing the masses to free fall through a distance substantially equal to said height under the force of gravity; and
(c) raising the masses after free fall thereof to said height without providing for storage of the masses.

4,201,060

GEOTHERMAL POWER PLANT

Harry D. Outmans, Laguna Beach, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Aug. 24, 1978, Ser. No. 936,609
Int. Cl.² F03G *7/00*
U.S. Cl. 60—641 **12 Claims**



1. A method for generating electricity using the thermal energy contained in a subterranean hydrothermal formation and a subterranean dry hot rock formation, which comprises:
(a) producing a hot geothermal fluid from said hydrothermal formation;
(b) passing said hot geothermal fluid in heat exchange relationship with a liquid working fluid, thereby forming a cool geothermal liquid and supplying a substantial amount of sensible heat to preheat said working fluid;
(c) passing the preheated working fluid through a first well into heat exchange relationship with said dry hot rock formation, thereby further heating and vaporizing said working fluid to form a hot vapor;
(d) recovering said hot vapor; and
(e) utilizing said hot vapor in a heat engine/generator to generate electricity.

4,201,061

AUTOMATIC CHILLED WATER SETPOINT TEMPERATURE CONTROL

Edward J. Heffernan, Skaneateles, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

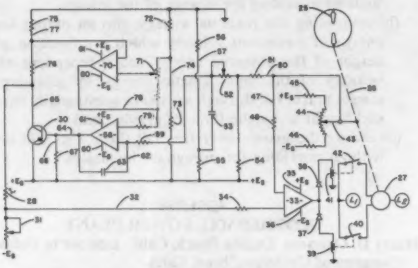
Filed Mar. 22, 1978, Ser. No. 889,089
Int. Cl.² F25D *17/00*; F25B *1/00*
U.S. Cl. 62—98 **11 Claims**

1. In a control for a mechanical refrigeration machine having means to produce a first electric control signal having a magnitude that is a function of the amount of work done by a com-

pressor of the machine, and means to produce a second electric control signal having a magnitude which represents a variable component of a setpoint temperature, the improvement comprising:

means to sense the magnitude of the first electric control signal;

means to change the magnitude of the second electric control signal in response to a change in the magnitude of the



first electric control signal so that the variable component of the setpoint temperature changes in response to a change in the amount of work done by the compressor; and

means to delay changing the magnitude of the second electric control signal so that the amount of work done by the compressor becomes stable before the variable component of the setpoint temperature changes.

4,201,062

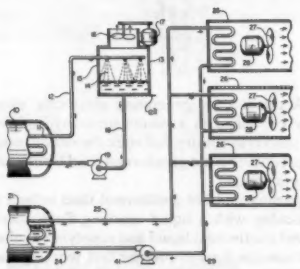
METHOD AND APPARATUS FOR CONSERVING ENERGY IN AN AIR CONDITIONING SYSTEM

George Martinez, Jr., P.O. Box 1141, Gonzales, La. 70737

Filed Jul. 27, 1978, Ser. No. 928,537

Int. Cl.[2] F25B *5/00*; F28D *5/00*; F25B *1/00*

U.S. Cl. 62—117 **8 Claims**



1. An air conditioning system comprising:

a. condenser means;

b. evaporator means;

c. cooling source means;

d. compressor means for conveying vaporous refrigerant from said evaporator means to said condenser means;

e. means for conveying liquid refrigerant from said condenser means to said evaporator means;

f. first liquid circuit means for circulating liquids between said evaporator means and said cooling unit means;

g. second liquid circuit means for circulating liquids between said condenser means and said cooling source means;

h. reservoir means for containing refrigerant;

i. means for transferring liquid refrigerant from said reservoir means to said condenser means and said evaporator means to fill both said condenser means and said evaporator means with liquid refrigerant; and,

j. pump means for circulating said liquid refrigerant between said condenser means and said evaporator means after said condenser means and said evaporator means have been filled.

5. A method for conserving energy in an air conditioning system having condenser means, evaporator means, cooling source means, cooling unit means, first liquid circuit means for circulating liquids between said evaporator means and said cooling unit means, second liquid circuit means for circulating liquids between said condenser means and said cooling source means, means for conveying liquid refrigerant from said condenser means to said evaporator means, and means for conveying vaporous refrigerant from said evaporator means to said condenser means comprising:

a. de-energizing said means for conveying vaporous refrigerant from said evaporator means to said condenser means;

b. substantially filling said condenser means and said evaporator means with liquid refrigerant;

c. circulating said liquid refrigerant between said evaporator means and said condenser means; and,

d. circulating liquids through said second liquid circuit means to transfer heat from said condenser means.

4,201,063

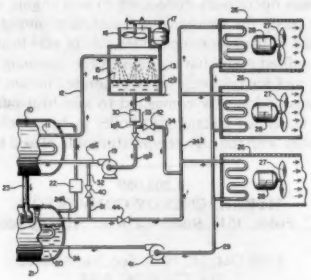
METHOD AND APPARATUS FOR CONSERVING ENERGY IN AN AIR CONDITIONING SYSTEM

George Martinez, Jr., P.O. Box 1141, Gonzales, La. 70737

Filed Jul. 27, 1978, Ser. No. 928,538

Int. Cl.[2] F25B *5/00*; F28D *5/00*; F25B *1/00*

U.S. Cl. 62—117 **19 Claims**



1. An air conditioning system comprising:

a. condenser means;

b. evaporator means;

c. cooling tower means;

d. cooling unit means;

e. means for conveying liquid refrigerant from said condenser means to said evaporator means;

f. means for conveying refrigerant from said evaporator means to said condenser means;

g. first liquid circuit means for circulating liquids between said evaporator means and said cooling unit means;

h. second liquid circuit means for circulating liquids between said condenser means and said cooling tower means;

i. means for connecting said first liquid circuit means to said second liquid circuit means to permit said liquids in said first liquid circuit means and said liquids in said second liquid circuit means to commingle and flow through said first and said second liquid circuit means.

13. A method for conserving energy in an air conditioning system having condenser means, evaporator means, cooling tower means, cooling unit means, first liquid circuit means for circulating liquids between said evaporator means and cooling unit means, second liquid circuit means for circulating liquids between said condenser means and said cooling tower means, means for conveying liquid refrigerant from said condenser means to said evaporator means, and means for conveying

refrigerant from said evaporator means to said condenser means, comprising:

a. de-energizing said means for conveying refrigerant from said evaporator means to said condenser means;

b. connecting said first liquid circuit means to said second liquid circuit means to permit said liquids in said first liquid circuit means and said liquids in said second liquid circuit means to commingle and flow through said first and said second liquid circuit means; and,

c. circulating said liquids in said first liquid circuit means and said second liquid circuit means through said first and said second liquid circuit means.

4,201,064

AIR CONDITIONER FOR A BUS

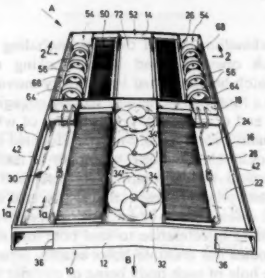
Martin Krug, Möglingen, and Paul R. Bihl, Ditzingen, both of Fed. Rep. of Germany, assignors to Sutrak Transportkalte, GmbH & Co., Ditzingen, Fed. Rep. of Germany

Filed Apr. 27, 1978, Ser. No. 900,739

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 7714617[U]

Int. Cl.² B60H 3/04

U.S. Cl. 62—239 **17 Claims**



1. An air conditioner unit adapted to be mounted on the roof of a motor vehicle, said unit comprising a housing with a front wall, two side walls and an upper cover, at least two elongated condensor units being arranged side by side within said housing behind its front wall and extending substantially parallel to said side walls, at least two elongated evaporator units being arranged side by side within said housing behind the condensor units and extending substantially parallel to said side walls, said at least two condensor units being parallel to said side walls, said at least two condensor units being adapted to receive air flowing substantially transversely to their longitudinal axes and parallel to said upper cover, and means for directing such transversely flowing air toward the condensor units.

4,201,065

VARIABLE CAPACITY VAPOR COMPRESSION REFRIGERATION SYSTEM

Charles K. Griffin, Auburn, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,516

Int. Cl.² F25B 1/10

U.S. Cl. 62—510 **5 Claims**

1. A vapor compression refrigeration system comprising:

evaporator means for evaporating refrigerant;

compressor means for compressing vaporous refrigerant;

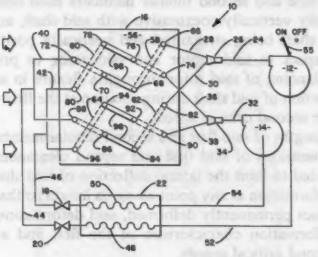
low pressure refrigerant line means for passing refrigerant from the evaporator means to the compressor means;

a condenser including a plurality of generally parallel heat exchange fins and a plurality of refrigerant circuits running through the condenser generally transverse to the heat exchange fins, wherein groups of the refrigerant circuits cover in overlapping fashion the area of the condenser transverse to the direction of the flow of an external heat exchange medium moving thereover;

condenser-evaporator refrigerant line means for conveying condensed refrigerant from the condenser to the evaporator means;

expansion means located in the condenser-evaporator line means for reducing the temperature and pressure of refrigerant passing therethrough;

a plurality of high pressure refrigerant lines for passing refrigerant from the compressor means to the condenser;



refrigerant distribution means in each of the high pressure refrigerant lines, wherein each group of refrigerant circuits is connected to a different distribution means; and

means for selectively preventing the flow of refrigerant through at least a selected one of the high pressure refrigerant lines, wherein the group of circuits connected to the distribution means in the selected refrigerant line is removable from service without appreciably reducing the effective heat exchange area of the condenser.

4,201,066

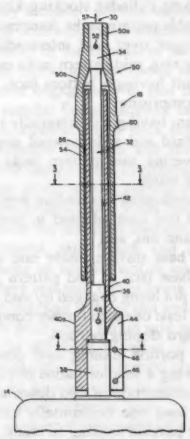
FLEXIBLE SHAFT CONSTRUCTION FOR A HIGH INERTIA CENTRIFUGE

Thomas E. Nolan, Jr., Medfield, Mass., assignor to Damon Corporation, Needham Heights, Mass.

Filed Mar. 29, 1978, Ser. No. 891,341

Int. Cl.² F16C 1/00, 3/00

U.S. Cl. 64—1 V **10 Claims**



1. In a centrifuge that includes a motor secured on an elastomeric mount, a rotor vertically spaced above the motor, and a flexible shaft connected at its upper end to a rotor adapter that replaceably supports the rotor and at its lower end to the

motor to transmit rotational energy from the motor to the rotor, the shaft having a relatively long, thin flexible portion intermediate said connections, wherein the improvement comprises a shaft construction comprising,

a first tubular member connected to and extending vertically from the motor toward the rotor,

a second tubular member connected to and extending vertically from said rotor adapter toward said motor,

said first and second tubular members each surrounding said shaft and defining first and second annular clearances between said shaft and one another,

said first and second tubular members each being substantially vertically coextensive with said shaft, and

said shaft being structured and vertically positioned with respect to said motor and said rotor to produce self-balancing of said rotor through a flexure in said flexible portion of said shaft during rotation at the first and at least the second critical speeds,

the lengths of said first and second tubular members and the dimensions of said first and second clearances being selected to limit the lateral deflection of said shaft due to a deformation at any point along its length so that said shaft is not permanently deformed, said deformation including deformation characteristic of the first and at least the second critical speeds.

4,201,067

SAFETY DEVICE IN A CIRCULAR KNITTING MACHINE

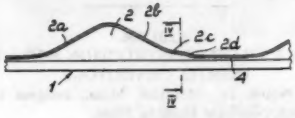
Francesco Lonati, Brescia, Italy, assignor to Costruzioni Meccaniche Lonati S.p.A., Brescia, Italy

Filed Apr. 24, 1978, Ser. No. 899,661

Claims priority, application Italy, Apr. 28, 1977, 22937 A/77

Int. Cl.[2] D04B *15/32, 15/66*

U.S. Cl. 66—222 **5 Claims**



1. A safety device in a circular knitting machine, in particular a high speed single cylinder stocking knitting machine of the type having tiltable pattern jacks, intermediate jacks thereover, needles arranged over said intermediate jacks, and a pattern jack guiding ring, said pattern jacks each having a base face and a lower butt having a bottom face, and said pattern jack guiding ring comprising:

(a) at least one cam having a substantially triangular profile having an upward and a downward sloping portion for lifting and lowering said pattern jacks by engagement with said lower butts,

(b) at least one horizontally extending portion downstream of said at least one cam adapted to permit said pattern jacks to tilt in and out, and

(c) a continuous base surface inside said guiding ring for engaging said base face of said pattern jacks when said lower butts are not being engaged by said at least one cam, wherein said at least one cam further comprises, at the end of said downward sloping portion,

(i) a curvilinear portion joining said downward sloping portion and having a smaller radius of curvature than an ideal radius of connection of said downward sloping portion to said at least one horizontally extending portion, said curvilinear portion tending to reach, with respect to said base surface, a level substantially corresponding to the level of said bottom face of said lower butts of said pattern jacks with respect to said base face of said pattern jacks, and

(ii) a further downward sloping portion between said curvilinear portion and said at least one horizontally extending portion.

4,201,068

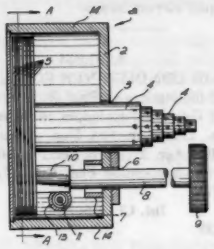
COMBINATION LOCK

Luis Morana, Paraguay 3074, 3000 Ciudad de Santa Fe, Argentina

Filed Nov. 14, 1978, Ser. No. 960,651

Int. Cl.[2] E05B *37/04, 37/02*

U.S. Cl. 70—310 **4 Claims**



1. New combination lock of the type including a box containing a latch operating and latch blocking mechanism; wherein said latch being formed by a axially movable body is provided with a toothed ratchet like section engaging a pinion located at the end of a rod the opposite end of which is provided with a handle for manual operation located outside said box; in said block being installed a number of laminar bodies which are mounted with a rotating character and have their respective centers joined to respective shafts, said shafts forming a telescopic assembly and having their respective operating sections externally in reference to said box; and each one of said laminar bodies has multiple holes equally separated from the center; one hole of each body being of circular section and having a slightly greater diameter than the pinion external diameter; and the remaining holes of each disc having a section of such shape that allows the pinion ingress but blocks the rotation thereof; said rod being installed in a bushing for blocking said pinion, the cross section of said bushing being adapted to block said pinion rotation.

4,201,069

KNOB FOR A DOOR LOCK

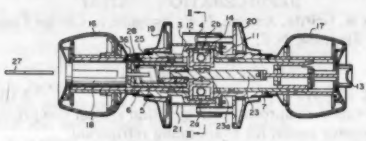
Akira Katayama, 195-2 Kubo Tamaki-cho, and Osamu Shimoi, 2-202 Koyosokushinjyutaku 541-4 Akeno Obato-cho, both of, Watarai-gun, Mie-pref., Japan

Filed Nov. 27, 1978, Ser. No. 964,060

Claims priority, application Japan, Nov. 29, 1977, 52-159170[U]; Dec. 10, 1977, 52-165846[U]; Dec. 28, 1977, 52-179530[U]

Int. Cl.[2] B60R *25/02;* **E05B** *63/00*

U.S. Cl. 70—422 **8 Claims**



1. An improved knob for use with a door lock which door knob is prevented from being forcibly twisted and disconnected from the door lock to prevent releasing of the door lock, the door lock having a spindle, the improvement of which comprises:

a knob shaft having a plurality of breakable projections at

the end thereof, the knob shaft transmitting rotation of the knob to the spindle;

a knob back plate to which the plurality of projections at the end of the knob shaft are affixed;

a knob face plate at the foremost end of the knob integrally superposed with the knob back plate;

the knob having a hollow portion and a rear end portion adjacent thereto;

a knob bottom plate loosely positioned on the knob shaft near the rear end of the knob;

a locking projection portion formed on the knob shaft; and

means for resiliently locking the knob bottom plate with the locking projection portion of the knob shaft whereby an excessive twisting force applied to the knob causes the breakable projections of the knob shaft to break permitting the knob shaft to freely rotate on the door lock spindle and whereby pulling out of the door knob from the door lock shaft is prevented by the resilient locking of the knob bottom plate with the locking projection portion of the knob shaft.

4,201,070

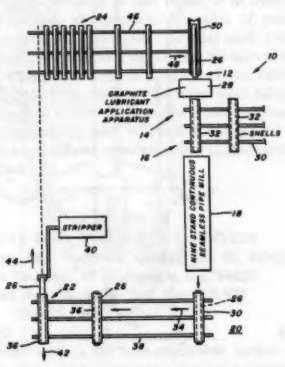
GRAPHITE LUBRICANT APPLICATION METHOD

John J. Seaton, Greentree Borough, and James K. Slagle, Washington Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 730,410, Oct. 7, 1976, Pat. No. 4,132,096. This application Oct. 2, 1978, Ser. No. 947,967

Int. Cl.² B21B *17/04, 45/02*

U.S. Cl. 72—42 **2 Claims**



1. The method of lubricating mandrels employed within a seamless pipe mill with a nonsmoking lubricant, said method comprising:

moving the mandrels from an exit portion of the seamless pipe mill toward an entrance end thereof;

cooling the mandrels as they are moved from the exit end of the mill toward the entrance end;

aligning the mandrels along a longitudinal axis parallel to a line of travel of the mandrel within the seamless mill; and

selectively applying a coating of graphite and water mixture, with a binder additive, to each successive mandrel just prior to its insertion within the pipe mill and a seamless pipe shell.

4,201,071

MANDREL FOR HIGH PRESSURE TUBE EXTRUSION PRESS

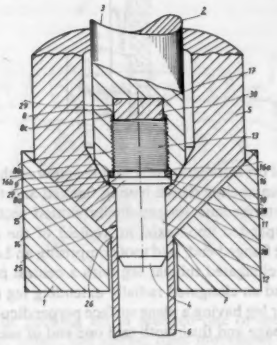
Bertil Mattsson, and Jan Nilsson, both of Robertsfors, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Jan. 27, 1978, Ser. No. 872,873

Claims priority, application Sweden, Feb. 7, 1977, 7701308

Int. Cl.² B21C *23/32, 25/04*

U.S. Cl. 72—60 **5 Claims**



1. A mandrel for use in conjunction with a corresponding cylindrical die located in the cylinder of a high-pressure press useful for hydrostatically extruding tubes, said mandrel comprising:

an elongated tip member including a tip disposed at one end thereof adapted to be positioned in the opening of the die to present an annular gap for shaping material into tubes;

a carrier structure for said tip member and adapted for mounting in said cylinder to fix the position of the tip relative to said die opening, said structure including means presenting a tip member receiving bore having a relatively inner internally threaded portion and an outer cylindrical mouth portion with a diameter which is at least as great as the root diameter of the threads of the threaded portion,

said tip member including a threaded segment at its other end in threaded engagement in said threaded portion of the bore, an annular flange disposed between said tip and said threaded segment and a neck segment disposed between the threaded segment and the flange, the outer diameter of the flange being substantially the same as the inner diameter of the mouth portion and the diameter of the neck segment being no greater than the root diameter of the threads of the threaded segment, said threads of the threaded segment, said flange and said neck segment thereby defining an annular slot in said tip member,

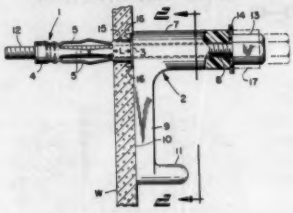
said neck segment and said flange being disposed on the tip member such that said annular slot and at least a portion of the flange are positioned within said mouth portion of the bore when the threaded segment of the tip member is threadably engaged in the threaded portion of the bore, to thus present an annular space in said mouth portion surrounding said neck segment; and

a divided ring element constructed of a material capable of withstanding the pressures and temperatures of a high pressure extrusion operation and comprising a pair of half-ring sections mounted on said flange in said space and in surrounding relationship to said neck segment to facilitate assembly and disassembly of the mandrel.

4,201,072
TOOL FOR INSTALLATION OF TOGGLE-SCREW ANCHORS

John H. Snell, 1300 S. Broadway, Lantana, Fla. 33462

Filed Dec. 20, 1978, Ser. No. 971,346
Int. Cl.[2] B21J *15/38*
U.S. Cl. 72—114 3 Claims



1. A tool for installation of a toggle-screw anchor of the type including an anchor sleeve having flanged and threaded ends with an intermediate longitudinally slotted section which is radially expanded upon axial movement of the threaded end toward the flanged end; said tool comprising an L-shaped body having an elongated tubular leg with a central passage therethrough and an elongated radially extending leg at one end of said tubular leg having a plane surface perpendicular to the axis of said passage and flush with said one end of said tubular leg; and an actuating screw having head means bearing on the other end of said tubular leg and having a shank extending through said passage and axially beyond said one end for screwing thereonto an anchor sleeve with its flanged end snugly engaged with said one end whereby said projecting screw end and anchor sleeve thereon may be inserted into a hole in a wall or the like with said plane surface of said radially extending leg engaged with the outer surface of the wall to retain said tubular leg, screw, and anchor sleeve perpendicular to the wall; said screw, upon turning thereof with respect to the anchor sleeve by torque applied on its head while said radially extending leg is held against the wall and against rotation, being operative to expand the anchor sleeve to grip the inside surface of the wall around the hole; the radial extremity of said radially extending leg having an axial projection parallel to said tubular leg to facilitate holding of said body against the wall and against rotation when said actuating screw is turned.

4,201,073
REACTION BENDER FOR PIPE

Homer L. Eaton, Leucadia, Calif., assignor to Eaton-Leonard Corporation, Carlsbad, Calif.

Filed Mar. 17, 1978, Ser. No. 887,725
Int. Cl.[2] B21D *7/04*
U.S. Cl. 72—155 49 Claims

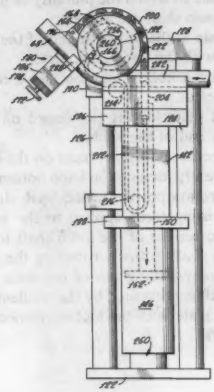
6. In a pipe bending machine wherein a pipe to be bent is clamped between rotary bend and clamp dies and pressed against another member by a pressure die to frictionally restrain and axially tension the pipe while the bend and clamp dies are rotated by a bending force, the improvement comprising

means for driving said pressure die toward said other member with a force that is a function of said bending force,

said machine including a rotary shaft, said bend die being mounted on said shaft,

a clamp die carrier mounted on said shaft for motion toward said bend die, said clamp die being mounted on said carrier,

means for rotating said bend die in response to motion of said clamp die carrier, and

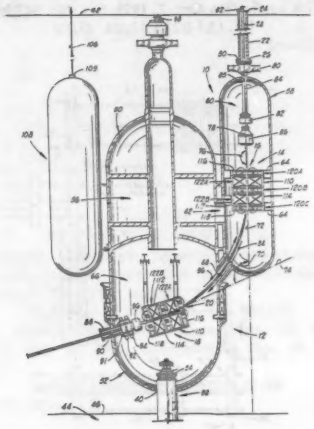


means for applying said bending force to said clamp die carrier to rotate said clamp die carrier and said bend die.

4,201,074
SUBMERSIBLE PIPE INSTALLATION SYSTEMS

John W. Cox, Oklahoma City, Okla., assignor to Transworld Drilling Company, Oklahoma City, Okla.

Division of Ser. No. 733,377, Oct. 18, 1976, Pat. No. 4,095,437.
This application Jun. 9, 1978, Ser. No. 914,573
Int. Cl.[2] B21D *3/02*; F16L *4/00*
U.S. Cl. 72—168 26 Claims



1. An apparatus for forming a pipe, comprising:

a frame assembly means;

at least three surfaces supported on the frame assembly means and spaced apart a predetermined distance to form a pipe passageway, the three surfaces each being movable to an engaged position for engaging and forming the portions of the pipe passing through the pipe passageway in a predetermined radius and at least one of the surfaces each being movable to a disengaged position for disengaging the surfaces from the pipe to permit separation of the pipe from the surfaces and the frame assembly means;

means for movably positioning the surfaces on the frame assembly means to the engaged position and to the disengaged position; and

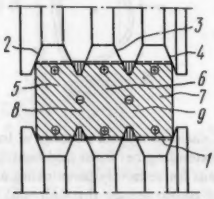
means for separating the surfaces and the frame assembly means from the pipe in the disengaged position of the surfaces.

4,201,075

METHOD OF ROLLING SECTION BILLETS

Julian M. Chumanov, ulitsa Rozy Ljuxemburg, 65, kv.33; Valentin M. Klimenko, bulvar Pushkina, 29, kv. 34; Grigory M. Shulgin, ulitsa Izjumovskaya, 5, kv. 232; Vyacheslav F. Gubaidulin, ulitsa Schorsa, 23, kv. 16, all of Donetsk; Vladimir P. Timofeev, ulitsa Kievskaya,12, kv. 63, Dnepropetrovsk; Vladimir P. Slednev, ulitsa Artema, 147 V, kv. 35, Donetsk; Stanislav N. Ignatiev, ulitsa Saratovskaya, 24, Donetsk; Pavel A. Levichev, ulitsa Orbity, 131, Donetsk, and Jury P. Lyashenko, ulitsa Universitetskaya, 58, kv. 53, Donetsk, all of U.S.S.R.

Filed Feb. 6, 1978, Ser. No. 875,414
Int. Cl.² B21B *1/00*
U.S. Cl. 72—204 **16 Claims**



1. A method of rolling section billets in at least two stages comprising the steps of rolling a slab successively so as to form a plurality of juxtaposed billets including outer billets, all having central portions and lateral side portions interconnected by bridge zones, using a series of passes formed of opposing rolls having a gap therebetween and a plurality of transversely aligned grooves by reducing the value of longitudinal tensile stresses in the central portions of said billets at at least one of said stages by changing the position of zones of prevailing reduction transversely of said billets so that said zones are displaced from the zone of said bridges and the lateral sides of the outer billets towards the central portions of said billets, and separating said billets from one another after said billets have been finally shaped; whereby surface flaws and internal flaws in said central portions of said billets are minimized by the reduction of said longitudinal tensile stresses in said portions or zones of said billets.

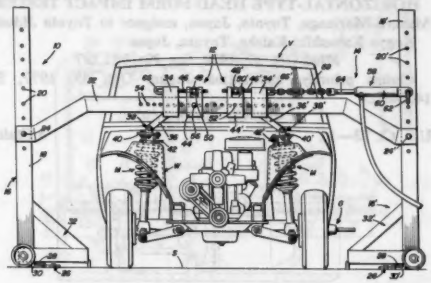
4,201,076

FRONT END ALIGNMENT SYSTEM

Davis R. Jarman, 612 Ward Dr., and Virgil H. Hinson, 206 Fairway Oaks Dr., both of Brunswick, Ga. 31520

Filed Jun. 15, 1978, Ser. No. 915,808
Int. Cl.² B21D *1/12, 25/00*
U.S. Cl. 72—392 **4 Claims**

1. An alignment system for non-adjustable motor vehicle front end suspensions, said system comprising support means anchorable relative to an adjacent vehicle being repaired, connector means movably mounted on the support means for removable connection to an element to be straightened, pull means movably mounted on the support means and connectible to the connector means for biasig the connector means and moving the element being straightened a desired amount, said support means including a pair of stands anchorable on a surface supportig the stands, the stands being arrangeable on opposite sides of a vehicle being repaired, a beam connected to and arranged extending between the stands, said support means further including a continuous anchor track having a slot-forming flange and affixable to the support surface, said track being arranged for surroundingly receiving a vehicle being repaired, each of the stands being provided with tongue means for engaging the slot-forming flange and being restrained from movement toward the vehicle, said connector means including a sleeve slidably disposed on the beam, an arm extending cantilever-fashion from the sleeve and connectible to a strut to be straightened, an adapter plate affixed to a upper end of the strut, said arm being attached to the adapter plate, the adapter plate being provided with a plurality of slots to permit the adapter plate to be employed with struts having various stud spacings on the upper end thereof, the connector means further including a collar slidably mounted on the beam and adjustably attached to the sleeve, the collar provided with an opening and the beam being provided with a plurality of holes, a pin engageable in the opening and a selected one of the holes for restraining the collar, and sleeve, from movement relative to the beam, the collar and sleeve comprising one of a pair of sets of a collar and sleeve, with one of the sets being connected to a respective strut of a pair of struts, and the other of the sets being connected to the other of the struts, with the pulling means including a linear motor pivotally connectible to a one of the stands and to the collar of ope of the sets of collar and sleeve for pulling the collar, and associated sleeve, toward the one of the stands to which the motor is connected, the other of the collars being secured to the beam by the pin being inserted in the opening of the collar and a selected one of the holes provided in the beam.

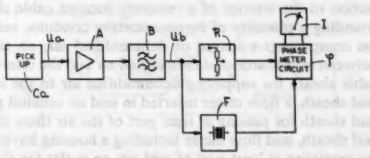


4,201,077

METHOD FOR MEASURING THE RATE OR THE FREQUENCY ERROR OF A QUARTZ TIMEPIECE AND MEASURING APPARATUS FOR CARRYING OUT THIS METHOD

Jacques Froidevaux, La Chaux-de-Fonds, Switzerland, assignor to Electronic Time Company ETIC S.A., La Chaux-de-Fonds, Switzerland

Filed Oct. 10, 1978, Ser. No. 949,993
Claims priority, application Switzerland, Oct. 10, 1977, 12339/77
Int. Cl.² G04D *7/12*
U.S. Cl. 73—6 **10 Claims**



1. Method of measuring the frequency error of a timebase frequency signal of a quartz crystal timepiece relative to a reference frequency comprising:

producing an input signal from the timepiece having a frequency equal to the timebase frequency signal,

applying the input signal to a passive quartz crystal filter having a resonant frequency equal to the reference frequency,

producing at least one phase comparison signal corresponding to the phase difference between the input signal and an output signal of the passive quartz crystal filter produced in response to the input signal being applied thereto, and

displaying said frequency error in response to said phase comparison signal on a meter including a dial graduated in units of frequency error.

4,201,078

HORIZONTAL-TYPE HEAD FORM IMPACT TESTER

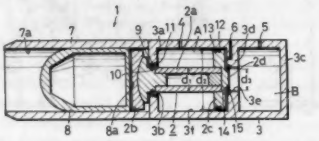
Masaru Morinaga, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 17, 1978, Ser. No. 952,197

Claims priority, application Japan, Oct. 19, 1977, 52-140245[U]

Int. Cl.[2] G01N *3/30*

U.S. Cl. 73—12 **3 Claims**



1. A horizontal-type headform impact tester comprising:

a cylindrical ram support having a front wall with an axial hole, a closed rear wall and three air inlets, the first of which is for set air, the second of which is for load air and the third of which is for trigger air;

a ram separate from and supported by said ram support;

a cannonball-like headform slidably received within said cylinder and adapted to be shot from said cylinder when said ram is pushed forward;

said ram being maintained stationary when set air pressure is equal to load air pressure within said ram support, but slid forward when the equality between the set and load air pressures is lost by the introduction of compressed trigger air through the third inlet into said ram support.

4,201,079

REMOTE FLOW TRANSDUCER FOR COMMUNICATION CABLE

Leslie Worcester, Los Altos, Calif., assignor to Mark Telephone Products, Inc., Mountain View, Calif.

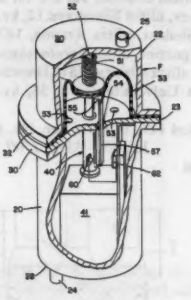
Continuation of Ser. No. 520,192, Nov. 1, 1974, Pat. No. 4,007,628. This application Sep. 29, 1976, Ser. No. 727,746

The portion of the term of this patent subsequent to Feb. 15, 1994, has been disclaimed.

Int. Cl.[2] G01M *3/28*; G01F *1/22*

U.S. Cl. 73—40.5 R **1 Claim**

1. Apparatus for remotely monitoring air flow at a central station to the interior of a remotely located cable sheath surrounding a plurality of communication conduits, said apparatus comprising: a source of dehumidified air; an air conduit between said source of dehumidified air and the interior of said cable sheath for supplying dehumidified air to the interior of said sheath, a flow meter inserted in said air conduit proximate said sheath for passing at least part of the air there through to said sheath, said flow meter including a housing having an inlet for receiving at least part of said air, an outlet for discharging at least part of said air, and a biased diaphragm mounted for movement with respect to said housing responsive to changes in flow of said dehumidified air from said conduit to said cable sheath, means for defining an aperture in said diaphragm, a tapered member mounted to said housing and coacting with said aperture for defining changing air flow areas between said inlet and outlet upon changing concentric movement of said aperture over said tapered member responsive to changes in fluid flow between said inlet and outlet; a member having variable optical density within said meter operatively attached to said diaphragm for relative movement to said meter with said diaphragm responsive to fluid flow; a light source in said flow meter on one side of said member of variable optical density; a photo sensor on the other side of said member of variable optical density for receiving from said light source a signal proportional to the diaphragm actuated movement of



said member of variable optical density; at least a pair of electrical conduits extending between said central station and said flow meter; means for remotely monitoring and powering said light source and photo sensor through said pair of electrical conduits; means for connecting said photo sensor across said pair of electrical conduits to impart between said conduits said signal proportional to the diaphragm actuated movement of said member of variable optical density; and meter means at said central power station connected across said electrical conduits for reading said proportional signal.

4,201,080

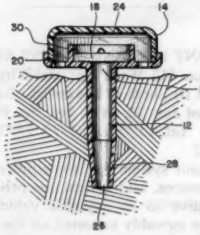
MOISTURE INDICATOR

Bernard Slepak, 252 Greenbay Rd., Highland Park, Ill. 60035; John E. Tucker, Cincinnati, Ohio, and William P. Heinrich, McHenry, Ill., assignors to Bernard Slepak, Chicago, Ill.

Continuation of Ser. No. 744,738, Nov. 24, 1976, abandoned. This application May 18, 1978, Ser. No. 906,942

Int. Cl.[2] G01N *25/56*

U.S. Cl. 73—73 **17 Claims**



10. A soil moisture indicator comprising:

an upper chamber, said upper chamber being defined by a supporting collar and a cap of transparent material positioned upon said collar, said upper chamber containing vents to the outer atmosphere;

a lower chamber, said lower chamber being provided with a stem portion having a bottom opening for communication with the subsurface of the soil;

passageway means interconnecting said upper chamber and said lower chamber;

a membrane positioned across said interconnecting means of said chambers, and separating said upper and lower chambers whereby substantial portions of moisture communicating between said upper and said lower chamber traverse said membrane; and

an indicator composition contained on said membrane having a color change responsive to a relative humidity above about 70%.

4,201,081

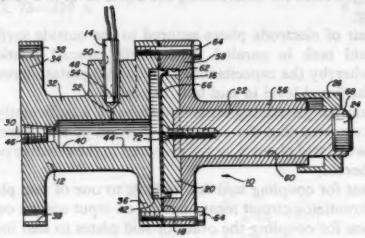
PRESSURE RESPONSIVE SENSING DEVICE

Melvin E. Bonomo, Bloomington, Ill., assignor to M & W Gear Company, Gibson City, Ill.

Filed Jul. 17, 1978, Ser. No. 925,046

Int. Cl.[2] G01G *5/04*

U.S. Cl. 73—141 R **3 Claims**



1. An improved pressure sensitive transducer measurement device comprising, in combination:

a housing, said housing defining a chamber open at one end having a tubular housing wall;

a generally non-compressible fluid within the chamber;

a constricted passage through the housing wall to the chamber for receipt of said fluid;

an electronic transducer device attached to the housing in communication with the constricted passage and on the outside of the chamber;

a cover plate over the open end of the housing and attached to enclose the chamber;

a diaphragm member retained between the cover plate and the housing and defining a generally planar interior surface of the chamber at the open end;

a plate member retained by the cover plate in opposed relation with the diaphragm member on the side of the diaphragm member opposite the interior of the chamber;

said cover plate having a bearing passage defining a bearing surface; and

a stem connected to the plate member and having an anvil attached to an end, said end generally frictionlessly projecting through the bearing passage in the cover plate for receipt of a force, said stem transmitting said force through the plate member against the diaphragm and to the noncompressible fluid within the chamber, so that the pressure in the fluid is equal to the force divided by the area of the interior surface of the diaphragm member, said pressure being transmitted through the constricted passage to the electronic transducer device, the diameter of the constricted passage and the ratio of the area of said plate member to the anvil so dimensioned to thereby avoid hysteresis in the output of said device, the ratio of the length of the bearing surface to the diameter of the stem being greater than 2.0 to 1.

4,201,082

PROCESS AND EQUIPMENT FOR DETERMINING THE DENSITY OF A LOADED DRILLING FLUID FROM A DEEP WELL, IN PARTICULAR AN OIL WELL

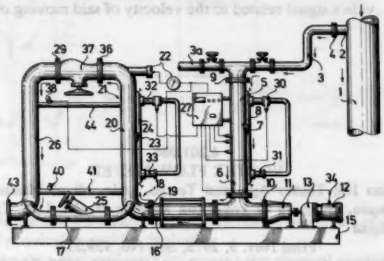
Wolfgang Dockhorn, Frankenwaldstr. 13A, D-4460 Nordhorn, Fed. Rep. of Germany, and Arnoldus Achterberg, Herodotuslaan 43, Assen, Netherlands

Filed May 23, 1978, Ser. No. 908,667

Claims priority, application Fed. Rep. of Germany, May 25, 1977, 2723618; May 18, 1978, 2821746

Int. Cl.[2] E21B *47/06*

U.S. Cl. 73—153 **18 Claims**



1. A process for measuring the gas content of a loaded, well drilling fluid comprising the steps of:

obtaining a sample of the fluid from the well;

supplying the fluid sample to a first chamber having a first pressure condition therein;

ascertaining the density of the drilling fluid under the first pressure condition;

removing the fluid sample from said first chamber and supplying same to a second chamber having a second pressure condition therein different from the first pressure condition;

ascertaining the density of the drilling fluid under the second pressure condition; and

determining, by means of the densities ascertained under the first and second pressure conditions, the gas content of the drilling fluid.

4,201,083

VELOCITY DETECTING APPARATUS

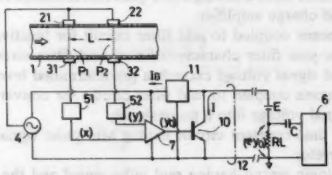
Yoshio Kurita, and Yukitake Shibata, both of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Jun. 6, 1978, Ser. No. 912,954

Claims priority, application Japan, Jun. 10, 1977, 52-69269

Int. Cl.[2] G01P *5/18*; G01F *1/70*

U.S. Cl. 73—194 E **4 Claims**



1. A velocity detecting apparatus comprising:

a two wire transmission line connecting a detecting end with a receiving end;

an operational circuit located on the detecting end receiving electric power through said transmission line and capable of detecting noise signals obtained from a relatively moving object at two points spaced apart from each other in

the direction of the motion and of producing an output signal responsive to the difference between the two noise signals;

a current control element located on the detecting end and connected to said transmission line to control the current flowing therein by the output signal of said operational circuit;

a d-c power source and current detecting means located on the receiving end and connected in series with said transmission line; and

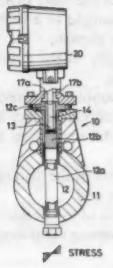
analysis means located on the receiving end to receive an input signal from said current detecting means and provide a signal related to the velocity of said moving object.

4,201,084

VORTEX FLOW METER

Ichizo Ito; Toshio Aga, and Tetsuo Ando, all of Musashino, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Nov. 9, 1978, Ser. No. 959,323
Claims priority, application Japan, Nov. 14, 1977, 52-136416; May 24, 1978, 53-61903
Int. Cl.² G01F *1/32*
U.S. Cl. 73—194 VS **10 Claims**



1. In a vortex flow meter having a vortex generator for producing Karman's vortices proportional to the flow velocity in a fluid to be measured and a piezoelectric sensor for detecting a vortex signal based on the Karman's vortices as a change in the quantity of electric charges comprising in combination:

(a) a charge amplifier coupler to said piezoelectric sensor for converting the alternating charge output of said sensor into an AC signal voltage;

(b) a filter circuit having a low-pass characteristic coupled to said charge amplifier;

(c) means coupled to said filter circuit for inactivating the low-pass filter characteristics of said filter circuit when said signal voltage exceeds a predetermined level;

(d) means coupled to said filter circuit for converting said signal voltage into a pulse signal;

(e) a time constant circuit having said pulse signal applied thereto;

(f) a logic circuit having said pulse signal and the other of said time constant circuit applied thereto functioning as an exclusive OR gate for producing an output pulse signal whose duty ratio corresponds to the vortex frequency; and

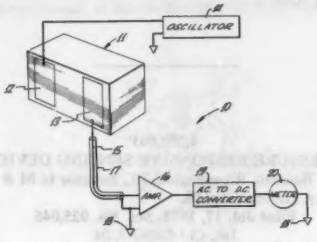
(g) an output circuit coupled to said logic circuit for converting the pulse output of said logic circuit into a DC signal representing the flow velocity or quantity of the fluid to be measured.

4,201,085

APPARATUS FOR DETERMINING THE LIQUID LEVEL IN A TANK

Roger G. Larson, 911 Laguna Rd., Fullerton, Calif. 92635

Filed Dec. 14, 1978, Ser. No. 969,334
Int. Cl.² G01F *23/26*
U.S. Cl. 73—304 C **8 Claims**



1. Apparatus for determining the liquid level in a tank comprising:

a pair of electrode plates secured to the outside surface of said tank in parallel, horizontally spaced relationship whereby the capacitance between said plates increases as the liquid level in said tank increases;

means for generating an AC voltage of a sufficiently high frequency that the capacitive portion of the current between said plates is large compared to the resistive portion thereof;

means for coupling said AC voltage to one of said plates;

differentiator circuit means having an input and an output;

means for coupling the other of said plates to said input of said differentiator circuit means; and

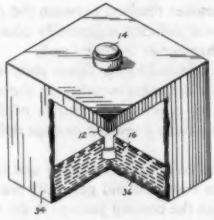
indicator means operatively coupled to said output of said differentiator circuit means for providing a quantitative indication of the volume of liquid in said tank.

4,201,086

VIEWING ROD FOR DETERMINING THE LEVEL OF LIQUID WITHIN A RECEPTACLE

Ira D. Jones, 1023 S. Main St., South Bend, Ind. 46601

Filed Nov. 20, 1978, Ser. No. 962,285
Int. Cl.² G01F *23/02*
U.S. Cl. 73—327 **1 Claim**



1. A device for viewing the level of liquid within a receptacle comprising a rod having light transmitting properties and an axis, said rod including a viewing end and an image transmitting end, said transmitting end having an end face interrupted by a concave conical depression defining a concave conical surface and being surrounded by an opaque sleeve, said sleeve extending from the end face of said image transmitting end to intermediate said rod ends, said rod having an exterior surface laterally disposed from said rod axis and about said conical surface, a transverse bore through said rod and sleeve in communication with said depression, a hollow pin fitted into

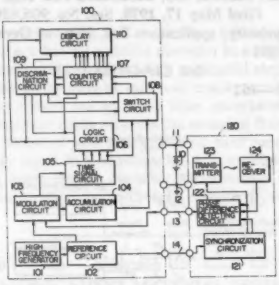
said bore at the sleeve to secure the sleeve to the rod, and means for anchoring said rod to said receptacle in a vertical orientation, whereby the level of said liquid when reaching said rod transmitting end will cause the venting of said depression and a change in visual observation of the transmitting end when viewed from the viewing end of said rod along said rod axis.

4,201,087

APPARATUS FOR MEASURING TEMPERATURE

Sigeyuki Akita, Nukata, and Hisato Wakamatsu, Toyota, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 13, 1978, Ser. No. 924,229
Claims priority, application Japan, Jul. 20, 1977, 52/87087
Int. Cl.[2] G01K *11/00*
U.S. Cl. 73—339 A **6 Claims**



1. An apparatus for measuring the temperature of an object which is a medium for ultrasonic sound wave propagation, said apparatus comprising:

pulse generator means for generating first pulse signals continuously at a predetermined frequency;

transmitter means for transmitting ultrasonic sound waves toward said object in synchronized relation with said first pulse signals of said pulse generator means;

receiver means for receiving said ultrasonic sound waves transmitted through said object at a location spaced from said transmitter means by a predetermined distance, said receiver means generating second pulse signals in synchronized relation with the received ultrasonic sound waves, said receiver means including,

a transducer for producing transducer signals across output terminals thereof in response to said received ultrasonic sound waves, and

a comparator connected to receive said transducer signals across input terminals thereof for converting said signals into said second pulse signals, said comparator being provided with a resistor between the output terminal and one of said input terminals thereof such that said second pulse signals is kept independent of the temperature;

detector means for detecting the phase difference between said first and second pulses to generate third pulse signals having time intervals equal to the detected phase difference; and

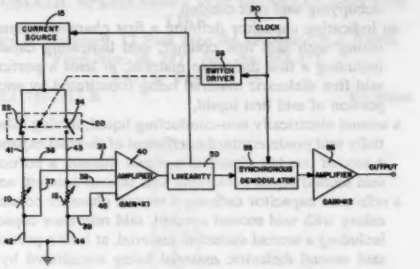
measuring means for measuring said time intervals of said third pulses to provide output values indicative of the temperature of said object in proportion to the measured time interval.

4,201,088

DIFFERENTIAL MEASURING SYSTEM

Harry L. Trietley, Jr., Yellow Springs, Ohio, assignor to Yellow Springs Instrument Company, Inc., Yellow Springs, Ohio

Filed Dec. 4, 1978, Ser. No. 966,261
Int. Cl.[2] G01K *7/16*
U.S. Cl. 73—342 **6 Claims**



2. Apparatus for measuring the differential between a plurality of physical quantities, including

a plurality of transducers for sensing the physical quantities,

a single, controlled power source,

means for connecting said power source sequentially to said transducers,

amplifier means,

cable means for connecting said transducers to said connecting means and to said amplifier means,

said amplifier means having inputs connected to said transducers through said cable means for measuring continuously a signal developed by said transducers and other signals developed in said transducers and said cable means,

means for modifying the magnitude of the output of said power source in response to the output of said amplifier means to linearize the output of said amplifier means, and

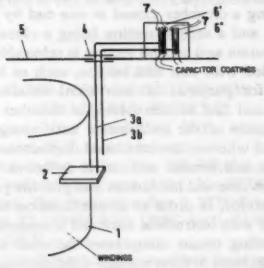
output circuit means connected to the output of said amplifier means for indicating the differential between the physical quantities sensed by said transducers.

4,201,089

TEMPERATURE MEASURING DEVICE FOR TRANSFORMERS AND REACTORS

Willibald Felber, and Elmar Woschnagg, both of Weiz, Austria, assignors to Elin-Union Aktiengesellschaft, Vienna, Austria

Filed Oct. 11, 1977, Ser. No. 840,675
Claims priority, application Austria, Oct. 8, 1976, 7480/76
Int. Cl.[2] G01K *1/20*
U.S. Cl. 73—350 **10 Claims**



1. A thermometer for measuring the temperature of at least one selected portion of an electrically-operated device disposed in a container,

comprising in combination:

a first electrically non-conducting liquid, having a predetermined coefficient of thermal expansion, in good thermal contact with the selected portion of said electrically-operated device, and adapted to be disposed in said container,

a first upwardly extending conduit adapted to communicate interiorly with said container, a portion of said first liquid occupying said first conduit,

an indicating capacitor defining a first chamber communicating with said first conduit, said indicating capacitor including a first dielectric material, at least a portion of said first dielectric material being constituted by another portion of said first liquid,

a second electrically non-conducting liquid, having substantially said predetermined coefficient of thermal expansion, a second conduit closed at one end thereof, a portion of said second liquid occupying said second conduit, and

a reference capacitor defining a second chamber communicating with said second conduit, said reference capacitor including a second dielectric material, at least a portion of said second dielectric material being constituted by another portion of said second liquid,

whereby any change in temperature in said first liquid will result in a change of the volume of said first liquid in said first chamber, so that any operative difference of the capacities of said indicating and reference capacitors will be proportional to any temperature change of the selected portion of said electrically-operated device.

4,201,090

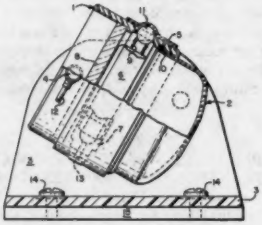
BUOYANT INSTRUMENT CASE AND HOLDER

William M. Davidson, Box 74, Mountain Lakes, N.J. 07046

Filed Sep. 7, 1978, Ser. No. 940,331

Int. Cl.² G01D *11/24*; G04B *37/08*

U.S. Cl. 73—431 **7 Claims**



1. A water-tight, buoyant instrument case to enclose one of a variety of selected instruments employing crown or plunger-type controls, such as timers, comprising:

a water-tight housing consisting of two sections, a first section being a chamber closed at one end by a lens sealed thereto, and a second section being a closure, such as a cap, wherein said second section is releasably engaged to and sealed with said first section, such as by threadable means, for purposes of instrument installation and removal; said first section having a chamber to receive a selected one of the instruments with plunger-type controls; and wherein, the combined displacement volume of said first and second sections is sufficient to offset the weight of case and instrument and provide positive buoyancy therefor, in order to insure flotation thereof, when said case with instrument enclosed is immersed in water;

flexible sealing means compressed between said first and second sections to form a water-tight enclosure when said two sections are engaged;

a plunger-type control in said instrument, said instrument supported by a removable support segment, mounted near the middle portion of said first section, said instrument being viewed through said lens which is made a part of said first section;

at least one aperture near the middle portion of said first section for access to instrument controls through said one of the apertures, thereby providing means for instrument actuation by manual depression of said plunger-type control;

elastic band sealing means, consisting of a flat, flexible band elastically stretched to fit peripherally over the outer surface of said first section, thereby providing resilient sealing means for said one of the apertures and permitting actuation of said instrument control through said aperture by manual depression of said control with said flexible seal;

mounting means, such as trunnions, affixed to said case for use in coupling to a mounting bracket or cord carrying means.

4,201,091

METHOD AND APPARATUS FOR DETERMINING THE ANGLE OF IMBALANCE OF A BALANCING MACHINE

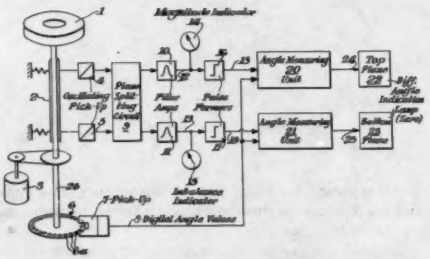
Volker Guyot, Buettelborn; Otfrid Maus, Darmstadt, and Martin Müeller, Bickenbach, all of Fed. Rep. of Germany, assignors to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,839

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1977, 2324696

Int. Cl.² G01M *1/22*

U.S. Cl. 73—462 **3 Claims**

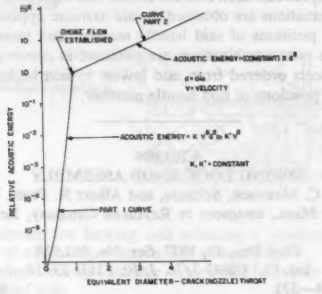


1. A method of determining the angle of imbalance of a rotating body during imbalance measurement on balancing machines with a digital angular position sensor and of rotating the body into the balancing position, comprising the steps of obtaining angle reference pulses from an incremental generator without a zero reference mark connected to the rotating body and imbalance angle representing pulses from vibration sensing means via suitable plane separating, filtering and pulse forming means, transmitting the angle reference pulses initially during the imbalance measurement process to a synchronous counter, dependent on an imbalance representing pulse, subsequently operating the synchronous counter to count on incremental pulses as a continuous counter, utilizing the imbalance angle representing pulses and a counting pulse representing the 180° position of the synchronous counter to control a flip-flop, utilizating the flip-flop to supply the pulses coming from the incremental generator through a reducing divider to a mean value counter during a number of revolutions of the incremental generator equal to the divider factor, whereby the content of the mean value counter represents digitally obtained angle information further during subsequent rotation into a balancing position, counting out the content of the mean value counter directly in response to pulses of the incremental generator in opposite direction beginning with a counting pulse representing the 180° position of the synchronous counter, and achieving the correct angular balancing position when the mean value counter is in the zero position.

4,201,092
METHOD OF DETECTING AND MONITORING A LEAK CAUSED BY A THROUGH WALL CRACK IN A HIGH PRESSURE FLUID SYSTEM

Gary J. Dau, Palo Alto, Calif., assignor to Electric Power Research Institute, Inc., Washington, D.C.

Filed Sep. 6, 1977, Ser. No. 830,988
Int. Cl.[2] G21C 17/00; G01N 9/24
U.S. Cl. 73—587 1 Claim

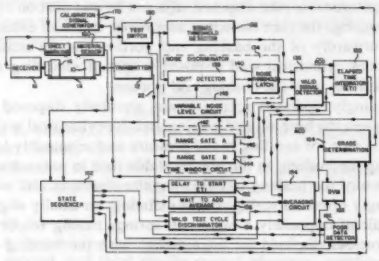

CURVE PART 2
CHOKE FLOW ESTABLISHED
ACOUSTIC ENERGY = (CONSTANT) X d⁴
d = dia
V = VELOCITY
ACOUSTIC ENERGY = K V⁸ d⁴ = K' d⁴
K, K' = CONSTANT
PART 1 CURVE
RELATIVE ACOUSTIC ENERGY
EQUIVALENT DIAMETER — CRACK (NOZZLE) THROAT

1. A method of detecting and monitoring a leak caused by a through wall crack having a throat diameter in a high pressure fluid system comprising the following sequential steps: sensing the acoustic energy emitted by said wall crack, monitoring the change of said sensed energy over time, ascertaining that a choke flow condition exists wherein the escaping fluid velocity through said throat of said crack is sonic thus rendering the acoustic energy equal to a constant, $k\rho_o A^3_o$, multiplied by the square of the crack throat diameter, determining any crack enlargement in accordance with said change of said sensed energy.

4,201,093
ULTRASONIC SHEET MATERIAL TESTING APPARATUS

James D. Logan, Pullman, Wash., assignor to Metriguard, Inc., Pullman, Wash.

Filed Jul. 20, 1978, Ser. No. 926,702
Int. Cl.[2] G01N 29/00
U.S. Cl. 73—618 28 Claims



1. A rolling apparatus for ultrasonic testing of sheet material which couples ultrasonic signals in either direction between a focusing surface of a transducer and the plane of the sheet, comprising:

wheel support means;

wheel means mounted to said wheel support means for rotation about the axis of said wheel means, said wheel means defining an interior transducer chamber for receiving the transducer and including a rim having a cylindrical contact surface for rolling in contact with the sheet;

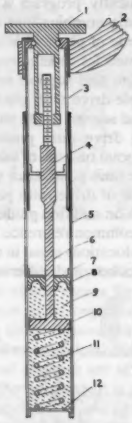
focusing means projecting inwardly into said transducer chamber from said contact surface for transmitting said ultrasonic signals in said either direction between the transducer focusing surface and plane of the sheet;

said focusing means comprising an annular focusing ring which rotates about the axis of said wheel means with the rolling of said rim.

4,201,094
AUTOMATIC SPEED SHIFT FOR BICYCLES AND THE LIKE

Richard K. Rathmell, 12 Pine Tree Rd., Ramsey, N.J. 07446

Filed Nov. 28, 1977, Ser. No. 855,172
Int. Cl.[2] F16H 11/00
U.S. Cl. 74—217 B 9 Claims



1. An automatic force-responsive shift control for a vehicle having:

a. At least one power driven wheel;

b. Pedals to receive input force provided by the rider;

c. An adjustable speed force transmission system, to transmit force from the pedals to a wheel, wherein the transmission speed represents a ratio of wheel speed to pedal speed, and the speed ratio can be shifted by a push or pull action;

d. A force sensing element having means to produce a motion signal in response to a force change;

e. A motion linkage system, with means to receive the said motion signal and to deliver a push or pull action to the force transmission system;

wherein the said force sensing element is restrained by a hydraulic damping system having means to prevent undesirable fast speed shifting due to shock loads, and means to prevent cyclic shifting due to the normal cyclic applications of force to the pedals.

4,201,095
SEMI-AUTOMATIC GEARSHIFT FOR DUAL DERAILLEUR BICYCLE

Salvatore Cirami, Long Island City, N.Y., assignor to Jack Myles, Freeport, N.Y., a part interest

Continuation-in-part of Ser. No. 763,604, Jan. 28, 1977, abandoned, Continuation-in-part of Ser. No. 607,432, Aug. 25, 1975, abandoned. This application Jun. 1, 1978, Ser. No. 911,460
Int. Cl.[2] F16H 9/00; G05G 9/00, 13/00
U.S. Cl. 74—217 B 4 Claims

1. For use on a bicycle having multiple front sprockets that differ from each other in pitch diameter and are mounted for rotation together around a common pedal crank axis, multiple rear sprockets that differ from each other in pitch diameter and are mounted for rotation together around a common rear

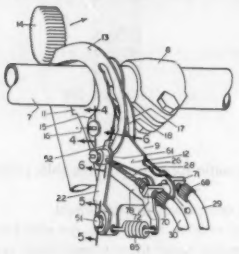
wheel axis, a closed loop of roller chain connecting together one each of said front and rear sprockets, a conventional front derailleur having a front transfer cage that is moved alternately in opposite directions between adjacent front sprocket alignment positions in response to a corresponding movement of a first cable means, and a conventional rear derailleur having a rear transfer cage that is moved alternately in opposite directions between adjacent rear sprocket alignment positions in response to a corresponding movement of a second cable means;

a semi-automatic gearshift in which the unitary result attained is characterized by a single handle member positioning cam means for simultaneous control of the sprocket alignment position of said front and rear transfer cages to mechanically program a progressive series of different drive ratio combinations of said front and rear sprockets; the mode of physical attainment comprising:

support means adapted for attachment to said bicycle;

cam means secured to said support means for placement in any one of multiple drive ratio positions, said cam means providing first and second guide surfaces that are placed in corresponding drive ratio positions, at each of said positions a given point on each of said guide surfaces being designated a drive ratio point, each such pair comprising a corresponding pair of drive ratio points;

the drive ratio points on said first guide surface being located relative to a first common reference on said cam means, at different distance-locations equal in number to the number of said front sprockets and differing sufficiently in distance-location that they program different front sprocket alignment positions of said front transfer cage;



the drive ratio points on said second guide surface being located relative to a second common reference on said cam means, at different distance-locations equal in number to the number of said rear sprockets and differing sufficiently in distance-location that they program different rear sprocket alignment positions of said rear transfer cage;

a handle member connected to said cam means for manual placement of said guide surfaces in any one of said drive ratio positions;

means to stabilize said handle member and said guide surfaces at any one of said drive ratio positions;

limit means to restrict said handle member and said guide surfaces to movement alternately in opposite directions between extreme opposite drive ratio positions;

a first cam follower secured to said support means and adapted to follow said first guide surface;

a second cam follower secured to said support means and adapted to follow said second guide surface;

the combination being so constructed and arranged that in each of said drive ratio positions when said first cam follower is aligned with a drive ratio point on said first guide surface said second cam follower is aligned with the corresponding drive ratio point on said second guide surface;

means for attachment of said first cable means to said first cam follower such that when the first cam follower is moved alternately in opposite directions said front transfer cage is moved alternately in opposite directions;

means for attachment of said second cable means to said second cam follower such that when the second cam follower is moved alternately in opposite directions said rear transfer cage is moved alternately in opposite directions;

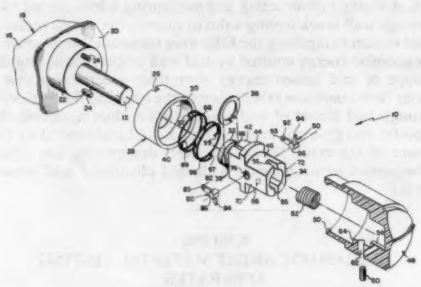
said corresponding pairs of drive ratio points each programming a different drive ratio combination of said front and rear sprockets such that the lowest and highest drive ratio combinations are obtained at said extreme opposite drive ratio positions of said handle member and intermediate drive ratio combinations are obtained in consecutive increments ordered from said lowest to said highest drive ratio positions of said handle member.

4,201,096

SPRING LOCK KNOB ASSEMBLY

Raymond C. Morrison, Scituate, and Albert R. Pratt, Weston, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 19, 1977, Ser. No. 861,915
Int. Cl.[2] G05G *5/16, 1/10*; F16D *13/14*
U.S. Cl. 74—531 **8 Claims**



1. A control knob assembly for mounting on an end portion of a rotatable shaft and comprising:

a bushing rotatably disposed to encircle the end portion of the shaft and having first interlocking means for transmitting rotary motion to the shaft;

a non-rotatable race disposed adjacent an end portion of the bushing, the race including an annular end wall extended outwardly of the bushing end portion and an attached outer cylindrical wall disposed in spaced encircling relationship with the bushing end portion;

windingly operated spring means annularly disposed between the bushing end portion and the cylindrical wall of the race for exerting radial pressure and releaseably locking the bushing to the non-rotatable race to prevent rotation of the bushing in either angular direction, the windingly operated spring means including an axially aligned pair of oppositely wound coil springs having respective portions disposed for engagement with the bushing end portion;

a knob shell supported rotatably about the bushing and having second interlocking means for transmitting rotary motion thereto;

release means axially aligned with a portion of the knob shell and disposed in engagement with the windingly operated spring means for controllably unlocking the bushing from the nonrotatable race in response to an axial force applied to the shell; and

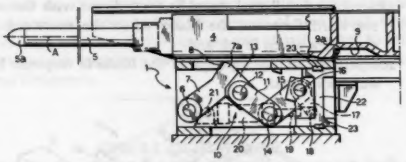
axially operated spring means disposed between the knob shell and the bushing for resiliently positioning the shell with respect to the bushing.

4,201,097

DEVICE FOR LOCKING AND RELEASING THE MANDREL-HOLDING CARRIAGE OF A PIERCING PRESSURE MILL

Teresio Passoni, Magenta; Alberto Mascheroni, Cormano, both of Italy, and Jean P. Calmes, Lausanne, Switzerland, assignors to Innocenti Santeustacchio S.p.A., Brescia, Italy

Filed Apr. 18, 1978, Ser. No. 897,544
Claims priority, application Italy, May 19, 1977, 23754 A/77
Int. Cl.[2] G05G *5/06*
U.S. Cl. 74—529 4 Claims



1. A device for locking and releasing a mandrel-holding carriage of a piercing pressure mill comprising:

a mandrel-holding carriage selectively movable along a mandrel axis;

at least one lever including a first end pivotally mounted on a horizontal shaft, said horizontal shaft being orthogonally positioned relative to said mandrel axis, and a second end of said lever being selectively rotatable to engage and disengage an abutment formed in said mandrel-holding carriage;

at least one toggle mechanism including a first rod pivotally connected to a second rod, said first rod including a free end being pivotally connected to said second end of said lever and said second rod including a free end being connected to a second horizontal shaft longitudinally displaced along said mandrel axis from said first horizontal shaft;

drive means operatively connected to said second horizontal shaft for actuating said toggle mechanism to selectively rotate said lever to engage and disengage said abutment formed in said mandrel-holding carriage;

said first and second rods being angularly disposed relative to each other upon actuation of said drive means to disengage said lever from said abutment formed in said mandrel-holding carriage; and

said first and second rods being aligned relative to each other upon actuation of said drive means to engage said lever with said abutment formed in said mandrel-holding carriage.

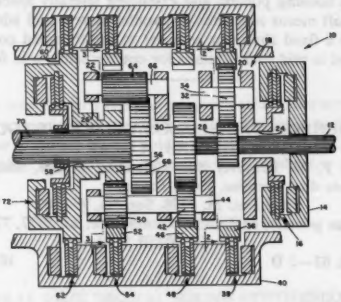
4,201,098

TRANSMISSION

James R. Harvey, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 735,379, Oct. 26, 1976, abandoned.
This application May 30, 1978, Ser. No. 910,394
Int. Cl.[2] F16H *57/10*
U.S. Cl. 74—761 12 Claims

1. A transmission comprising: a drive shaft; a driven shaft; first, second, and third axially spaced planetary units have a rotatable common planet carrier spanning the shafts; said first planetary unit including a first sun gear secured to the drive shaft, a first rotatable ring gear surrounding the first sun gear, and a first planet gear journaled in the planet carrier meshing with the first sun gear and the first ring gear; first brake means for selectively braking and releasing the first ring gear; first clutch means for selectively coupling the planet carrier and the drive shaft together; said second planetary unit including a second sun gear secured to the drive shaft axially spaced from the first sun gear, a second rotatable ring gear surrounding the second sun gear, and a second planet gear journaled in the planet carrier for rotation relative to the first planet gear meshing with the second sun gear and the second ring gear; second brake means for selectively braking and releasing the second ring gear; said third planetary unit including a third and fourth relatively rotatable gun gears, a third ring gear surrounding said third sun gear, a third planet gear journaled in the planet carrier meshing with the third sun gear and the third ring gear, and a fourth planet gear journaled in the planet carrier meshing with the third planet gear and the fourth sun gear; third brake means for selectively braking and releasing the third ring gear;



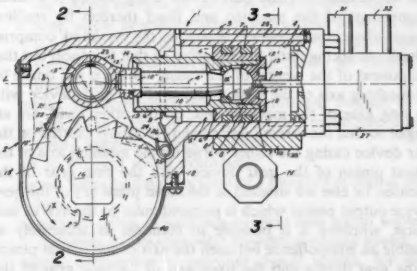
fourth brake means for selectively braking and releasing the third sun gear; second clutch means for selectively coupling the third and fourth sun gears together whereby the driven shaft is rotatable at six different forward ratios when the first, second, and fourth brakes are selectively braked and released and the first and second clutches are selectively coupled and released and whereby the driven shaft is rotatable at two different reverse ratios when the first and second brakes are alternately braked and released with the third brake braked.

4,201,099

HYDRAULIC WRENCH

John K. Junkers, 7 Arrow Head La., Saddle River, N.J. 07458

Filed Aug. 14, 1978, Ser. No. 933,134
Int. Cl.[2] B25B *13/46*
U.S. Cl. 81—57.39 14 Claims



1. A hydraulic wrench comprising a housing having a first housing portion and an elongated second housing portion extending transverse to said first housing portion and forming a cylinder having an axis extending in the longitudinal direction of said second housing portion; piston means reciprocatable in said cylinder; shaft means having an axis extending transverse to that of said cylinder and being turnably mounted in said first housing portion with an end portion of said shaft means projecting outwardly from said housing; a piston rod connected at one end to said piston means; at least one drive lever mounted in the region of one end turnable about the axis of the shaft means and being pivotally connected at the other

end thereof to the other end of said piston rod; a ratchet wheel fixed to said shaft means for rotation therewith; a ratchet pawl on said drive lever and engaging the ratchet wheel to rotate said shaft means upon reciprocation of said piston means in said cylinder; exchangeable socket means mounted on said end portion of said shaft means for engaging a polygonal head of a threaded connector for turning the latter, whereby during such turning of the threaded connector in one direction a force is created tending to turn said housing about the axis of said shaft means in the opposite direction; and means connected to said second housing portion and extending laterally spaced from said shaft means substantially parallel thereto and adapted to engage a fixed abutment adjacent to the threaded connector engaged in said socket means for counteracting said force.

4,201,100

MACHINES, PARTICULARLY MACHINE-TOOLS, DRIVEN THROUGH A GEAR DEVICE

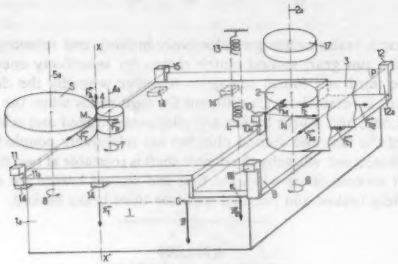
Marcel F. M. Bruyére, Bois Colombes, France, assignor to Societe dite: Berthiez, Paris, France

Filed Dec. 21, 1978, Ser. No. 972,082

Claims priority, application France, Dec. 23, 1977, 77 38940

Int. Cl.² B23B 9/00

U.S. Cl. 82—2 D **10 Claims**



1. A machine, particularly a machine-tool, driven by drive means through a gear device, in which the output movement of the gear device is transmitted to the machine by an output pinion of the gear device thereof meshing with a fixed axis ring gear of the machine, said gear device being housed in a casing independent of the machine and fixed thereon by resilient means, wherein said resilient means, on the one hand, comprise at least one spring fixed to the casing so that to cancel out that component of the weight of the casing which is not borne by the meshing axis of the output pinion of the gear device with the ring gear of the machine and, on the other hand, are arranged so that the forces (actions and reactions) exerted on the gear device casing are either borne by the meshing axis of the output pinion of the gear device with the ring gear of the machine, or else are situated in the mean plane (P) of the gear device output pinion which is perpendicular to the axis of said pinion, whereby it is possible to maintain as accurately as possible an equipollence between the axis of the output pinion of the gear device and the fixed axis of the ring gear of the machine.

4,201,101

CUTTING METHOD AND APPARATUS WITH AUTOMATIC TOOL SHARPENING

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Division of Ser. No. 790,149, Apr. 22, 1977, Pat. No. 4,133,235. This application May 25, 1978, Ser. No. 909,506

Int. Cl.² B26D 7/12

U.S. Cl. 83—22 **6 Claims**

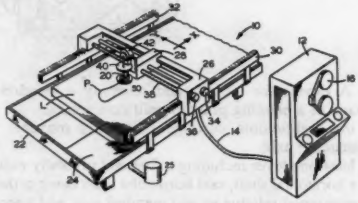
1. A method of cutting limp sheet material with an automatically controlled cutting machine having a cutting blade with a sharp leading cutting edge comprising:

generating fundamental machine command signals for translating the cutting blade and the limp sheet material relative to one another along a predetermined cutting path and translating the blade and material relative to one another in accordance with the command signals with the cutting edge of the blade in cutting engagement with the sheet material;

sensing the force of the material rearwardly against the advancing blade as the blade and material translate relative to one another in cutting engagement;

generating a dull-tool signal in accordance with the sensed rearward force on the blade when the rearward force exceeds a given level; and

sharpening the cutting edge of the blade in response to the dull-tool signal.



5. In a combination in an automatically controlled cutting machine having a cutting blade with a cutting edge, a blade sharpener for sharpening the cutting edge of the blade and displacement means for guiding the cutting blade in cutting engagement with the material in a spread condition along a predefined line of cut, the improvement comprising:

detecting means comprising a load sensor connected with the blade and detecting rearward forces on the blade as the blade advances along the line of cut, the sensor producing an output indicative of the condition of the cutting edge of the blade during the interaction of the blade and material; and

reacting means including a control regulating the operation of the blade sharpener and responsive to the output of the sensor to control initiation of a sharpening operation.

4,201,102

APPARATUS FOR SUBDIVIDING RUNNING WEBS INTO SECTIONS OF VARYING LENGTH

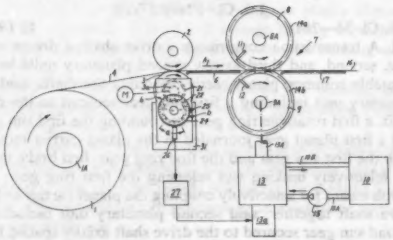
Willy Rudszinat, Dassendorf, Fed. Rep. of Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Fed. Rep. of Germany

Filed Oct. 24, 1978, Ser. No. 954,093

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749363

Int. Cl.² B26D 5/20

U.S. Cl. 83—298 **10 Claims**



1. Apparatus for severing a running web at variable intervals

to subdivide the web into sections of desired length, comprising means for advancing the web lengthwise along a predetermined path at a predetermined speed; at least one rotary cutter adjacent to said path and having means for severing the running web in at least one predetermined angular position thereof; and means for driving said cutter including a signal-responsive variable-stepping-rate stepping motor having output means operatively connected with said cutter and means for controlling the stepping rate of said motor, including means for transmitting to said motor signals at a first frequency in said predetermined angular position of said cutter to thereby rotate the cutter at said predetermined speed and at a selected one of a plurality of second frequencies to thereby rotate said cutter at a selected one of a plurality of second speeds in other angular positions of said cutter so that the interval of time which elapses between two successive movements of said cutter to said predetermined angular position is a function of the selected second frequency.

4,201,103

CIRCULAR SAW TOOL

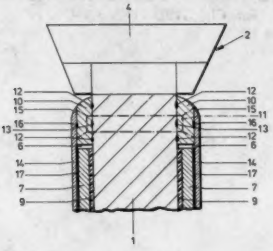
Ernst Salje, Bendestorf, and Ulrich Bartsch, Brunswick, both of Fed. Rep. of Germany, assignors to Ernst Salje, Bendestorf, Fed. Rep. of Germany

Filed Oct. 11, 1978, Ser. No. 950,282

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1977, 2746192

Int. Cl.[2] B27B *33/08*

U.S. Cl. 83—835 **28 Claims**



1. A circular saw comprising a main blade provided with teeth, and on at least one side of the main blade a cover element, an intermediate layer between the cover element and the main blade, and mechanical holding means, at least adjacent the periphery of the cover element holding the cover element on the main blade independently of the intermediate layer and allowing the intermediate layer to perform a damping function subject to thrusting stresses.

4,201,104

GLASS CUTTER

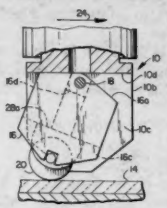
Thomas A. Insolio, Bristol, Conn., assignor to The Fletcher-Terry Company, Farmington, Conn.

Filed Nov. 9, 1978, Ser. No. 959,329

Int. Cl.[2] B26D *3/08*; C03B *33/10*

U.S. Cl. 83—886 **10 Claims**

1. A glass cutter for use in a glass cutting machine having a head adapted to traverse a glass sheet in one direction and to return in the opposite direction, said glass cutter comprising depending holder means mounted in the head for limited angular movement about a vertical axis said holder means defining a downwardly open slot, a movable member in said slot and having an upper surface with two discrete segments for selectively cooperating with upper portions of the inner surface of said holder means slot, a glass engageable tool carried by said movable member for scoring the glass sheet, means pivotally supporting said member in said holder means slot for pendulous movement in said slot between two limit positions defined by the abutment between said upper surface portions of said holder means slot and said two discrete segments of said member respectively, whereby said member is moved to one of said two limit positions while said tool is in contact with the glass



sheet in response to traversing motion of said holder member in one direction and to the other of said two limit positions in response to motion of said holder means in the return direction again while said tool is in contact with glass sheet.

4,201,105

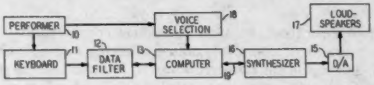
REAL TIME DIGITAL SOUND SYNTHESIZER

Harold G. Alles, Bridgewater, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 1, 1978, Ser. No. 901,489

Int. Cl.[2] G10H *5/10*, *5/02*

U.S. Cl. 84—1.01 **27 Claims**



1. A synthesizer for producing digital pulse-coded signal samples corresponding to predetermined analog signal samples in response to received digital signals defining constituent tones of said analog signal samples, the synthesizer comprising

means, responsive to digital amplitude control signals, for generating digital output signals representing corresponding analog samples of different ones of said tones,

a ramp signal generator, responsive to said received digital signals, for producing sets of digital amplitude control signals to control said generating means for each of said tones, and

means for combining selectable different outputs of said generating means to produce the first-mentioned digitally coded samples of analog signals.

16. In a digital sound synthesizer,

means for providing functions of a plurality of digital oscillators,

means for fixing at least one cyclical base signal waveform comprising a fundamental waveform of said sound,

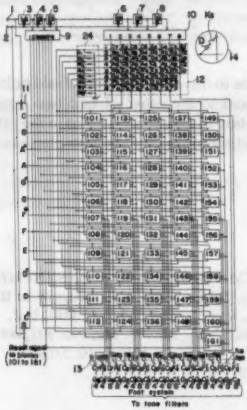
means, responsive to received digital signals, for storing digital oscillator function word sets, one for each of said oscillators, and each set including at least a coefficient word for fixing a predetermined modification of said base waveform for such oscillator, and

means in said providing means, and responsive to each of said coefficient words, for separately modifying said base signal waveform of the oscillator corresponding to said set including such coefficient word to produce a digitally coded amplitude sample of a different constituent tone of said sound, said amplitude samples of each tone being produced at a rate at least equal to twice the highest frequency of said sound.

4,201,106
ELECTRONIC MUSICAL INSTRUMENT

Takeji Kimura, Hirakata; Toyoki Takemoto, Tsuzuki; Michihiro Inoue, Hirakata, and Masaharu Sato, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 23, 1977, Ser. No. 799,316
Claims priority, application Japan, May 24, 1976, 51-59137; Dec. 20, 1976, 51-153999; Mar. 2, 1977, 52-22947; Mar. 14, 1977, 52-28176
Int. Cl.[2] G10H *3/00, 1/02*
U.S. Cl. 84—1.09 16 Claims



1. An electronic musical instrument comprising:
a plurality of selectively actuable keying means, each of said keying means corresponding to a single musical note;
a scanning means connected to said plurality of keying means for sequentially scanning said keying means for detection of the actuation of said keying means;
a memory means connected to said scanning means having a plurality of capacitive elements, each of said capacitive elements corresponding to one of said plurality of keying means and storing a predetermined electrical charge when said scanning means detects the actuation of said corresponding keying means;
an electrical discharging means connected to said memory means for sequential connection to each of said capacitive elements for partial discharge of said electrical charge stored therein; and
a plurality of musical tone generators, each connected to a corresponding one of said capacitive elements, each for generation of a musical tone signal having a frequency proportional to said corresponding musical note and an amplitude proportional to said charge stored in said corresponding capacitive element.

4,201,107
AUDIO POWER PERCUSSION PICKUPS

Harold G. Barber, Jr., 2136 Paddock Rd., Levittown, N.Y. 11783, and Charles L. Raimond, 142 Mariners Way, Copiague, N.Y. 11726

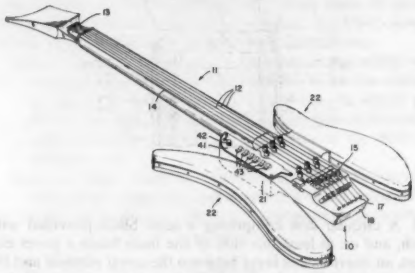
Filed Jun. 19, 1978, Ser. No. 917,321
Int. Cl.[2] H04M *1/04;* F16F *15/04;* H04R *1/28*
U.S. Cl. 84—1.14 4 Claims

1. Improved audio pickup structure for musical instruments comprising: a clamping means in the form of a strap defining a generally cylindrically shaped opening, said strap including a pair of mutually abutted ends defining congruent slots for the reception of mounting screw means, a foam coil strip vibration absorbing members disposed within said cylindrically shaped opening, and a pickup substantially enclosed and supported by said vibration absorbing means; whereby upon the mounting of said clamping means upon a musical instrument, said pickup is substantially insulated from the effects of mechanical vibrations emanating from said instrument, and is responsive to generated sound waves produced by said instrument.

4,201,108
ELECTRIC STRINGED INSTRUMENT

David D. Bunker, Sumner, Wash., assignor to Bunker Instruments, Inc., Tacoma, Wash.

Filed May 22, 1978, Ser. No. 908,377
Int. Cl.[2] G10D *1/08, 3/04, 3/14*
U.S. Cl. 84—1.16 7 Claims

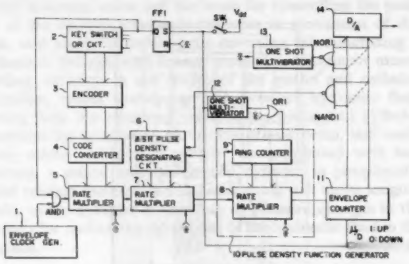


1. A stringed instrument having a body portion with an elongated neck structure extending therefrom, the neck structure having a finger board mounted thereon and extending along the neck member, a string supporting bridge mounted on the body portion in alignment with the neck member, a complement of strings for the instrument anchored at one end to the lower end of the body portion spaced from the bridge and extending along the neck and finger board and anchored at the other end to the upper end of the neck, and electrical pickup means for the strings, the improvement comprising:
a metal plate surrounding the body portion except for the upper surface thereof adjacent the strings, the metal plate including slots in each of the side surfaces of the body portion,
a pair of separate elongated wing bodies of sculptured design each wing body having protruding stems extending therefrom adapted to be received in the respective slots in each of the side surfaces of the body portion for securing the wing bodies to the body portion so that the wing bodies can be removably secured to opposite sides of the body portion adjacent the strings, said wing bodies providing the user of the instrument the flexibility of adding electronic add-on components or changing the color, finish and shape of the instrument.

4,201,109
ENVELOPE WAVEFORM GENERATOR FOR ELECTRONIC MUSICAL INSTRUMENTS

Hiroshi Kitagawa, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Aug. 15, 1977, Ser. No. 824,535
Int. Cl.[2] G10H *1/02*; G06M *3/00*
U.S. Cl. 84—1.26 2 Claims



1. An envelope waveform generator for electronic musical instruments, comprising:

a first circuit for converting envelope clock pulses from an envelope clock generator into a clock pulse train having a frequency proportional to a musical sound frequency, said first circuit being composed of a first rate multiplier receiving the envelope clock pulses and for producing an envelope speed corresponding to a key being depressed and a code converter for controlling said first rate multiplier corresponding to said key, said first rate multiplier thereby generating an output with a frequency proportional to said depressed key;

a second circuit being composed of an ASR pulse density designating circuit and a second rate multiplier, said second rate multiplier producing an output clock pulse with variable frequency in response to said ASR circuit, said frequency corresponding to the attack, sustain, and release portions of the envelope;

a pulse density function generator composed of a ring counter whose output changes upon each occurrence of a constant number of output clock pulses of said second rate multiplier and a third rate multiplier for controlling the output clock pulse frequency of said pulse density function generator in accordance with the output from said ring counter; and

an envelope counter for counting the output pulses from said third rate multiplier to provide the sum of pulse density functions as an envelope waveform.

4,201,110
HUB NUT WITH WASHER

Kiyoshi Hanai, Toyota, and Toshio Sugiura, Nishio, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Sugiura Seisakusho Co. Ltd., Nishio, both of, Japan

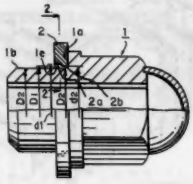
Filed Nov. 9, 1977, Ser. No. 850,050
Claims priority, application Japan, Dec. 29, 1976, 51/177808[U]
Int. Cl.[2] F16B *37/00, 43/00*; B23P *19/08*
U.S. Cl. 85—32 R 3 Claims

1. A hub nut with a washer, comprising:

a nut having a base upon which a cylindrical part is formed, said cylindrical part having an internally threaded longitudinal opening therein;

an annular band formed on the outside of said cylindrical part and adjacent to, but separated from, said base, said band providing alternating ridges of a diameter greater than said cylindrical part and grooves of a diameter smaller than said cylindrical part; and

a washer having a stepped inside surface, the larger diameter stepped portion of said washer being larger than said diameter of said ridges and the smaller diameter stepped portion of said washer being smaller than said diameter of said ridges, said smaller diameter stepped portion being

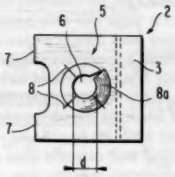


press fitted over said ridges of said band and being entirely located about the portion of said cylindrical part existing between said band and said nut base, said washer being freely rotatably about said hub nut.

4,201,111
SHEET METAL FASTENER AND METHOD OF MAKING

Otto Kuttler, Loerrach, Fed. Rep. of Germany, assignor to A. Raymond, Lorrach, Fed. Rep. of Germany

Continuation of Ser. No. 753,443, Dec. 22, 1976, abandoned.
This application Jan. 3, 1978, Ser. No. 866,257
Int. Cl.[2] F16B *17/00*
U.S. Cl. 85—32 V 4 Claims



1. A fastener comprising a sheet-metal plate having a central stamped portion shaped to define an internal screw thread formed by an aperture, said stamped portion having a plurality of slits extending generally radially of said aperture and spaced generally equally around said thread forming a plurality of independent substantially equally sized sectors, said slits being gapless and the lateral edges of said sectors being contiguous, said aperture having a mean diameter sized smaller than the root diameter of a screw to be used therewith.

4,201,112
ICE CREAM DISPENSER

James D. Owens, P.O. Box 14943, Orlando, Fla. 32857

Filed Jul. 17, 1978, Ser. No. 925,236
Int. Cl.[2] B26D *4/42*
U.S. Cl. 83—355 19 Claims

1. An ice cream dispenser for a home freezer, or the like, comprising in combination:

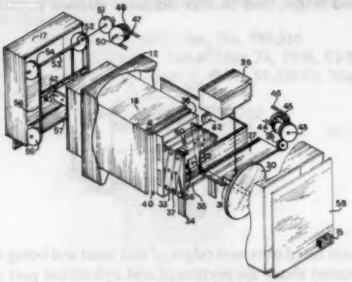
container means for holding a block of ice cream therein said container means having a front cover thereon;

attachment means for attaching said container to the inside of a freezer;

delivery means for pushing a block of ice cream in said container upon actuation of said delivery means; and

cutting means for cutting ice cream from one end of a block

of ice cream located in said container means front cover, whereby predetermined portions of ice cream are delivered from a block of ice cream inserted in said ice cream dispenser upon actuation thereof.



4,201,113

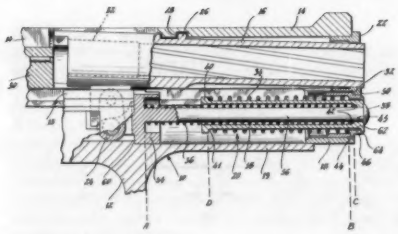
TELESCOPING RETURN-SPRING ASSEMBLY FOR AUTOMATIC HANDGUNS

Lueder Seecamp, 62 Shelter Cove Rd., Milford, Conn. 06460

Filed Aug. 29, 1978, Ser. No. 937,765

Int. Cl.[2] F41D *11/12*

U.S. Cl. 89—199 **17 Claims**



1. A return-spring assembly for a slide-type automatic pistol having a frame-member and a breech-closing slide-member reciprocably mounted thereon for movement into and out of battery, said return-spring assembly being mounted between said members for returning said slide-member to battery and comprising

outer and inner elongate coil springs arranged coaxially in telescoping relation and

an elongate sleeve-like spring coupling device disposed co-axially of said springs and having an external spring-retainer adjacent one end and an internal spring-retainer adjacent its opposite end,

at least a portion of said outer spring being disposed externally of said spring-coupling device and restrained at one end by said external spring-retainer from axial movement in one direction relative to said spring-coupling device, the other end of said outer spring being restrained by one of said members such that said outer spring is under compression when said slide-member is in battery,

at least a portion of said inner spring being disposed within said spring-coupling device and restrained at one end by said internal spring-retainer from axial movement in the opposite direction relative to said spring-coupling device, the other end of said inner spring being restrained by the other of said members such that said inner spring is also under compression when said slide-member is in battery.

4,201,114

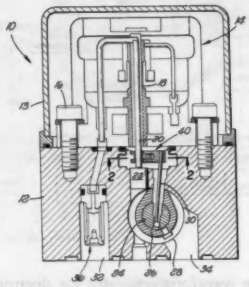
ELECTROHYDRAULIC SERVOVALVE HAVING REMOVABLY ATTACHED FEEDBACK ELEMENT

Clyde E. Cobb, Lakeview Terrace, and Donald A. Muths, Lake Hughes, both of Calif., assignors to Textron Inc., Providence, R.I.

Filed Oct. 23, 1978, Ser. No. 953,652

Int. Cl.[2] F15B *13/16*

U.S. Cl. 91—3 **12 Claims**



1. Electrohydraulic servovalve comprising:

(A) a torque motor having a member driven responsive to electrical signals applied thereto to produce pressure signals;

(B) a spool movable responsive to application of said pressure signals thereto;

(C) a mechanical feedback member connected between said spool and said driven member for providing spool positional signals to said driven member during normal operation of said valve;

(D) a tang extending radially from said driven member;

(E) a holder for receiving said feedback member and having:

(1) a body, and

(2) first and second opposed flanges extending from said body and defining aligned apertures therethrough for receiving said driven member,

(3) one of said flanges defining an indexing aperture intersecting said opening therein for receiving said tang, said indexing aperture being displaced from the normal operational position of said feedback member; and

(F) means for clamping said holder to said tang to position said feedback member in a normal operational position.

4,201,115

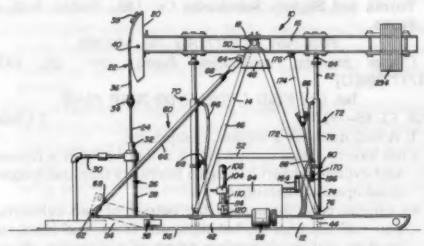
OIL WELL PUMP JACK WITH DUAL HYDRAULIC OPERATING CYLINDERS

Ethridge F. Ogles, Rte. 4, Box 201, Ada, Okla. 74820

Filed Jul. 11, 1978, Ser. No. 923,666

Int. Cl.[2] F01L *15/00*; F16D *31/00*

U.S. Cl. 91—218 **10 Claims**



1. In combination, a pump jack for well pumps comprising a support, a beam mounted on said support for pivotal move-

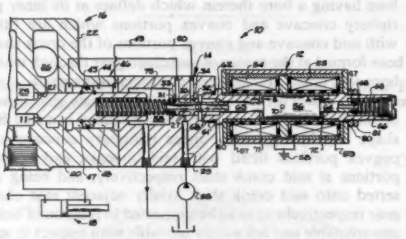
ment about a generally horizontal transverse axis, a horse head at one end of said beam for connection with a polish rod of a well pump, a pair of hydraulic fluid pressure operated piston and cylinder assemblies connected to said beam for powering the beam about its pivot axis, a counterbalance weight on said beam on the opposite side of the transverse axis from the horse head, each of said piston and cylinder assemblies being powered from a hydraulic pump having a separate conduit connected to each end of the cylinders, a reversing valve communicating the pump with the conduits, and means interconnecting the reversing valve and the beam for controlling the position of the reversing valve in response to movement of the beam, said means controlling the reversing valve including a mechanical linkage, said linkage including adjustment means enabling variation in the stroke of the piston and cylinder assemblies, means cushioning high pressure hydraulic fluid moving from the reversing valve to the piston and cylinder assemblies for cushioning movement of said beam, said cushioning means including a cylinder communicated with said conduits, a piston movable in said cylinder in peripherally sealed relation thereto whereby said piston will move longitudinally in the cylinder in response to pressure changes in the conduits for cushioning movement of the hydraulic fluid in the conduits.

4,201,116

ELECTRO-HYDRAULIC PROPORTIONAL CONTROL SERVO VALVE

Robert J. Martin, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Jul. 11, 1977, Ser. No. 814,764
Int. Cl.[2] F15B *13/16*
U.S. Cl. 91—387 **10 Claims**



8. An electro-hydraulic proportional control servo valve including a conventional directional control valve and control valve spool;

a double acting cylinder connected to the directional control valve spool having first and second chambers;

a double acting solenoid having a pair of coils capable of actuating the solenoid core in opposite directions;

a pressure fluid source and drain;

a four-way pilot valve including a valve spool connected to one end of the solenoid core which controls the position of said double acting cylinder, the pilot spool having a neutral flow blocking position; a first operating position connecting said pressure source with a first chamber of said double acting cylinder while connecting the opposing second chamber of said cylinder to drain, and a second operating position connecting the pressure source with the second chamber while draining the first chamber;

a first spring means positioned between the pilot spool and the control valve spool providing a feedback function urging the pilot spool toward its first operating position;

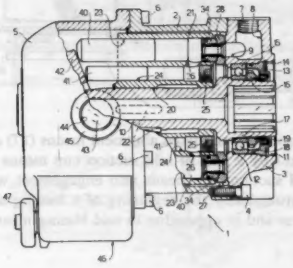
a second spring means having a spring rate greater than the first spring means connected to the solenoid core, acting in opposition to the first spring means urging the pilot spool toward its second operating position, the second spring means being so positioned that when the solenoid is not energized and the control valve spool is neutrally positioned, the pilot spool will be neutrally balanced between the two spring means, and the combined spring rates of the first and second spring means being greater than the rate of force change of the solenoid with respect to solenoid travel.

4,201,117

HYDRAULIC MOTOR

Lidio Gherner, Via Valdellatorre, 279, 10091 Alpignano (Torino), Italy

Filed Apr. 3, 1978, Ser. No. 892,490
Claims priority, application Italy, Apr. 5, 1977, 67744 A/77
Int. Cl.[2] F01B *13/04*
U.S. Cl. 91—499 **5 Claims**



1. A hydraulic motor with axial pistons comprising a casing; a central shaft rotatably supported by said casing; a rotor mounted in a cavity in said casing and keyed onto said shaft; a plurality of pistons axially mobile in a sealed manner along respective axial bores provided through said rotor; said pistons being arranged to move with this latter with one of their ends in contact with a plate facing an axial end of said rotor and forming an angle with the axis thereof; first and second header means facing the other axial end of said rotor to connect said cavity to an inlet and outlet respectively for a pressurized fluid; and rotating distribution means disposed in a sealed manner between said header means and the rotor to connect a first and second part of said axial bores to said first and second header means respectively; said rotating distribution means comprising a toroidal member cooperating in a sealed manner with said header means, and a plurality of key means each engaging in a sealed manner in a respective one of said axial bores to angularly connect said toroidal member and said rotor together; each of said key means being connected to said toroidal member by an articulated joint, duct means being provided through each of said key means and through said toroidal member to connect each of said axial bores to one of said header means, and said articulated joint including an elastically deformable tubular rivet extending in a sealed manner along the respective said duct means and gripping against opposing surfaces of the relative key means and said toroidal member.

4,201,118

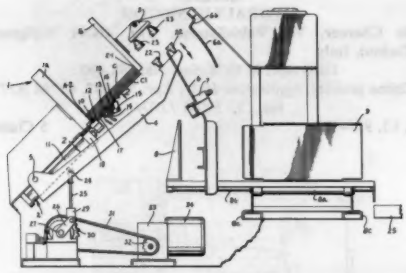
MACHINE FOR MANIPULATING A COLLAPSED BASKET STYLE CARTON INTO SET-UP CONDITION AND FOR ADHERING END FLAPS TO END PANELS AT EACH END OF THE CARTON

Rodney K. Calvert, Dunwoody, and Alton J. Fishback, Austell, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 24, 1978, Ser. No. 963,202
Int. Cl.[2] B31B *1/76*
U.S. Cl. 93—39 R **8 Claims**

1. A machine for withdrawing the lowermost carton (C) from a stack of cartons in a hopper (1) said machine comprising a reciprocable feeder arm (10) disposed below the hopper (1) and having an upwardly projecting part (12) for engaging an

edge (A2) of said carton and for sliding such carton from the hopper, suction cup means (13) pivotally mounted on said feeder arm, biasing means (19) for imparting swinging movement to said suction cup means (13) downwardly and away



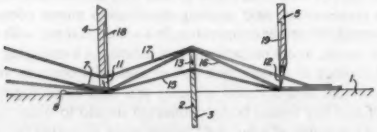
from said hopper (1), and fixed abutment means (17) disposed for engagement by a part of said suction cup means (13) for swinging said suction cup means into engagement with said carton at approximately the beginning of a feeding stroke of said feeder arm and in opposition to said biasing means.

4,201,119

FILTER PLEATING MACHINE

Roger P. Wolf, Mars, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Sep. 8, 1978, Ser. No. 940,552
Int. Cl.[2] B31B *3/26*; B31F *1/22*
U.S. Cl. 93—60 **1 Claim**



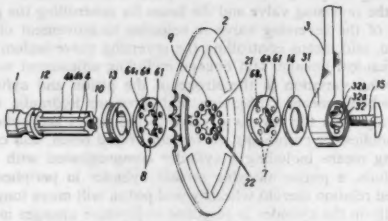
1. In a filter pleating machine in which a laterally and vertically movable pusher bar and a parallel vertically movable stripper bar are normally spaced apart laterally above a table, and a vertically movable breaker bar is between the other two bars and normally below the table top in a plane parallel to the other two bars, the improvement in which the pusher bar and the stripper bar each has a plurality of longitudinally spaced upwardly extending slots in its lower edge for receiving parallel separator tapes above a filter strip extending along the table beneath said bars, and the breaker bar has a plurality of longitudinally spaced downwardly extending slots in its upper edge for receiving parallel separator tapes below such a strip when the breaker bar is raised, said tapes being unattached to said strip, said upwardly extending slots having upper end walls for engagement by the upper tapes after said breaker bar has moved upwardly a predetermined distance to start forming a fold in the filter strip, and said downwardly extending slots having lower end walls for engaging and lifting the lower tapes after said breaker bar has moved upwardly a predetermined distance, whereby to form tape folds of less depth than the filter folds.

4,201,120

GEAR CRANK FOR BICYCLES

Takashi Segawa, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Feb. 2, 1978, Ser. No. 874,530
Claims priority, application Japan, Feb. 5, 1977, 52/12710[U]
Int. Cl.[2] G05G *1/14*
U.S. Cl. 74—594.2 **6 Claims**



1. A gear crank for a bicycle, comprising a crank shaft, a pair of crank arms and a chain gear, at least one of said crank arms being formed separately from said crank shaft to be fixed thereto together with said chain gear by a fixing means, said gear crank further comprising;

a plurality of concave and convex portions formed at the outer periphery of at least one axial end of said crank shaft and extending axially thereof;

a boss formed at one lengthwise end of one of said crank arms, said one crank arm being mounted to said one axial end of the crank shaft together with said chain gear, said boss having a bore therein which defines at its inner periphery concave and convex portions which are fitted with said concave and convex portions of the crank shaft;

a bore formed at the center of said chain gear through which bore said chain gear is fitted onto said crank shaft;

gear-fixing plates for fixing therewith said chain gear to said crank shaft, each of said plates being formed in a ring-like shape and having at the inner periphery concave and convex portions fitted with said concave and convex portions at said crank shaft respectively, and being inserted onto said crank shaft axially adjacent said chain gear respectively so as to be supported in relation of being non-rotatable and not axially movable with respect to said crank shaft;

an engaging means provided between said plates and chain gear so as to prevent said chain gear from being rotated with respect to said crank shaft; and,

a stopper provided at said one axial end of the crank shaft inwardly of the concave and convex portions for restricting said gear-fixing plates from being axially inwardly moved;

said fixing means comprising screw means screwed with said crank shaft to urge said crank arm toward said stopper to sandwich said gear-fixing plates and chain gear between said stopper and said boss of said crank arm.

4,201,121

METHOD OF VENTING HEAT FROM HOMES

Frank J. Brandenburg, Jr., Rte. 1- Box 487-5, Ashland, Va. 23225

Filed Jul. 31, 1978, Ser. No. 929,825
Int. Cl.[2] F24F *7/00, 7/06*
U.S. Cl. 98—33 R **7 Claims**

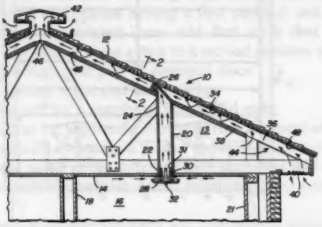
1. In a building having a roof and at least one environmental space separated from the roof by at least a ceiling and an attic-like space between the roof and the ceiling, apparatus for causing heated air from the upper portions of the room to be vented from the building, comprising:

a siphon duct member extending between the ceiling and upper portions of the attic-like space, the siphon duct

member being opened at lower and upper ends, the lower end of the siphon duct member communicating with the upper portions of the room;

means for defining a draft channel within the attic-like space, the upper end of the siphon duct member extending into the draft channel and communicating with the interior thereof to discharge air from the room into the draft channel;

vent means for causing a flow of air through the draft channel from and to wherein the vent means comprise:



a soffit vent formed in a lower portion of the roof and communicating the interior of the attic-like space with ambient, the soffit vent channeling a flow of ambient air into the attic-like space and subsequently into the draft channel; and,

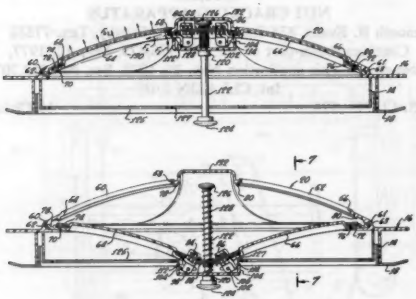
a ridge vent formed in an upper portion of the roof and communicating the interior of the draft channel with ambient, flow of air from the soffit vent passing through the draft channel and out of the building through the ridge vent.

4,201,122

SNAP DOOR VENT

Edmund D. Maciag, Torrance, Calif., assignor to Elixir Industries, Gardena, Calif.

Filed Nov. 3, 1978, Ser. No. 957,449
Int. Cl.² B60H *1/26*; E05F *9/00*
U.S. Cl. 98—2.14 **29 Claims**



1. a vehicle vent assembly comprising

a vent frame adapted to be mounted in an opening of a vehicle and having front, back and side portions,

a vent cover fixed to said frame and having a cover body extending rearwardly and outwardly from a front portion of said vent frame to provide an area of decreased pressure as said vehicle moves forwardly, said cover body having a cover opening extending across at least a part of said area of decreased pressure laterally toward a side portion of said vent frame,

a resilient door,

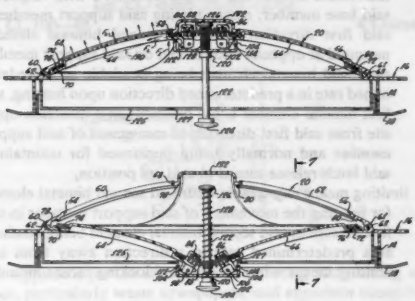
means for mounting said door for motion to a first position wherein said cover opening is closed and sealed by said door and to a second position wherein said door is displaced inwardly from said cover opening at said area of decreased pressure, and toggle means including said resilient door for holding said door in said second position.

4,201,123

SNAP DOOR VENT WITH SPRING

Edmund D. Maciag, Torrance, and Garold D. Frymire, Buena Park, both of Calif., assignors to Elixir Industries, Gardena, Calif.

Filed Nov. 3, 1978, Ser. No. 957,450
Int. Cl.² B60H *1/26*; E05F *9/00*
U.S. Cl. 98—2.14 **5 Claims**



1. A vehicle vent assembly comprising

a vent frame adapted to be mounted in an opening of a vehicle and having front, back and side portions,

a vent cover fixed to said frame and having a cover body extending rearwardly and outwardly from a front portion of said vent frame to provide an area of decreased pressure as said vehicle moves forwardly, said cover body having a cover opening extending across at least a part of said area of decreased pressure laterally toward a side portion of said vent frame,

a resilient door,

means for mounting said door for motion to a first position wherein said cover opening is closed and sealed by said door and to a second position wherein said door is displaced inwardly from said cover opening at said area of decreased pressure, and toggle means including a compression spring abutting an edge portion of said door for holding said door in said second position, wherein said spring tends to compress and said door tends to bend as the door moves between said portions, and wherein compliance of said door is greater than compliance of said spring whereby said door will experience a greater dimensional change than the spring during motion between said positions.

4,201,124

TEMPERATURE SENSITIVE TIMING DEVICE FOR TOASTER APPLIANCE

Peter E. Huggler, Columbia, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Feb. 27, 1978, Ser. No. 881,612
Int. Cl.² A47J *37/08*
U.S. Cl. 99—327 **14 Claims**

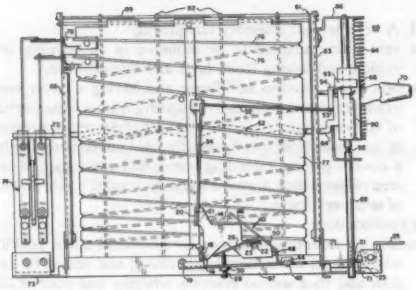
1. In a toaster appliance including housing means defining a bread toasting cavity, a bread carrier for conveying slices of bread and the like to be toasted movable between toasting and nontoasting positions, to position said bread slices into and out of said toasting cavity, respectively, means biasing said carrier to said nontoasting position, latch means for holding said carrier in said toasting position against the force of said biasing means, said latch means including resettable latch release means operable between set and released positions for releasing

said latch means thereby permitting said carrier to be moved from said toasting to said nontoasting position, said latch release means being operable to said set position in accordance with the return of said carrier to said nontoasting position and heating means operable upon said carrier being moved to said toasting position for toasting said bread slices carried in said carrier,

a temperature sensitive timing device for controlling the length of said toasting cycle and the positioning of said latch release means between said set and released positions, said device including:

a support member mounted on a base member for pivotal movement in first and second directions with respect to said base member, means biasing said support member in said first direction, first and second bimetal elements mounted at opposite ends of and on said support member, each said bimetal element being bendable at a predetermined rate in a predetermined direction upon heating, said first bimetal element being bendable in a direction opposite from said first direction of movement of said support member and normally being positioned for maintaining said latch release means in said set position,

limiting means engageable with said second bimetal element for limiting the movement of said support member in said first direction, said second bimetal element being bendable at a predetermined rate in a direction away from said limiting means when heated, and locking means mounted



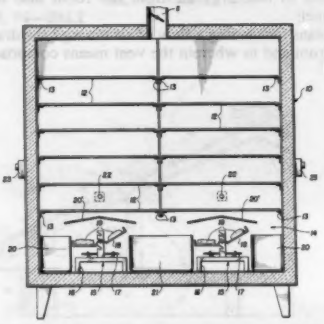
adjacent said support member, movable between a first normal position, out of engagement with said support member to a second locked position, into engagement with said support member in response to the movement of said bread carrier from said nontoasting to toasting position for securing said support member against movement by said biasing means in said first direction, said locking means releasing said support member for movement by said biasing means in response to the movement of said bread carrier from said toasting to said nontoasting position, said first and second bimetal elements bending in said predetermined directions, respectively, when heated in response to the operation of said heating means, said latch release means being movable to said released position upon said first bimetal element bending to a predetermined position, whereby said latch means is operable to release said bread carrier for movement from said toasting to said nontoasting position, said locking means releasing said bimetal element support member in response to the movement of said bread carrier toward said nontoasting position, whereby said support member moves in said first direction a predetermined distance determined by the repositioning of said second heated bimetal element with respect to said limiting means, whereby said first bimetal element is moved with said support member for holding said latch release means in said set position in preparation for a subsequent toasting cycle.

4,201,125

WOOD RESIN COOKING APPARATUS

Clarence E. Ellis, 724 Monument Rd., Ponca City, Okla. 74601

Filed Jan. 5, 1979, Ser. No. 1,215
Int. Cl.[2] A23B *4/04*; A47J *37/06*
U.S. Cl. 99—446 **2 Claims**



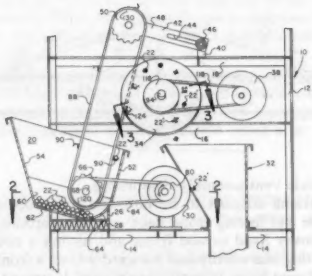
1. A slow cooking apparatus comprising an upright housing having a top vent, vertically spaced superposed food racks supported within the housing in two side-by-side rows across the housing horizontally, a pair of laterally spaced heating elements and associated supports for slow burning fuel elements within the housing near the bottom wall thereof and below the two rows of food racks and being centered relative to the two rows laterally, a thermostat switch and a timer switch for each heating element on the housing, each heating element being serially coupled between its individual thermostat switch and timer switch, and each heating element and its serially coupled thermostat and timer switches being coupled in parallel with the other heating element and its thermostat and timer switches, and means for connecting the parallel coupled heating elements and thermostat and timer switches to a source of electrical power.

4,201,126

NUT CRACKING APPARATUS

Kenneth R. Evans, 834 Runneberg Rd., Crosby, Tex. 77532

Continuation-in-part of Ser. No. 796,475, May 12, 1977, abandoned. This application Nov. 21, 1978, Ser. No. 962,707
Int. Cl.[2] A23N *5/00*
U.S. Cl. 99—574 **14 Claims**



1. A nut cracking apparatus comprising:

a hopper for storing a supply of uncracked nuts;

a cracking means for separating the shell from the meat of said uncracked nuts including a pair of opposed discs, rotating at the same speed about different axes, such that said discs are in adjustable angular offset relationship to one another;

transport means located between and operatively associated with said hopper and said cracking means for delivering said uncracked nuts to a first location between said opposed discs where said uncracked nuts are wedged therebetween by said transport means and then displaced arcuately to a second location by the rotational movement of said opposed discs for cracking with a cracking force proportional to the size of said uncracked nuts; and

collapsible nut-receiving receptacles located on said transport means for supporting said uncracked nuts while being delivered between said cracking means, said collapsible nut-receiving receptacles having a first position and second position constricted from said first such that said receptacles collapse from a first to a second position while moving through said pair of opposed discs.

9. A nut cracking apparatus comprising:

a hopper for storing a supply of uncracked nuts;

cracking means for separating the shell from the meat of said uncracked nuts including a pair of opposed discs, rotating at the same speed about different axes, such that said discs are in adjustable angular offset relationship to one another;

transport means located between and operatively associated with said hopper and said cracking means for delivering said uncracked nuts to a first location between said opposed discs where said uncracked nuts are wedged therebetween by said transport means and then displaced arcuately to a second location by the rotational movement of said opposed discs, for cracking with a cracking force proportional to the size of uncracked nuts, and said opposed discs having an angular relationship to provide a minimum and maximum separation distance therebetween.

4,201,127

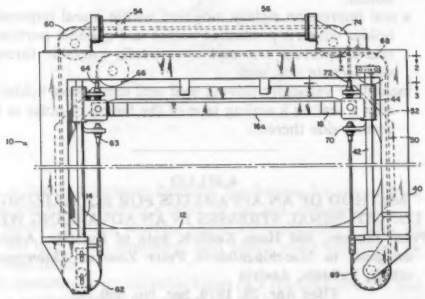
HOLD-DOWN ACCELERATION DEVICE

James A. Pasic, Montesano, Wash., assignor to Ovalstrapping, Inc., Hoquiam, Wash.

Filed May 24, 1978, Ser. No. 908,814

Int. Cl.² B65B *13/20*

U.S. Cl. 100—7 **10 Claims**



1. Apparatus for compacting and accelerating an article comprising:

a movable conveyor having a conveying surface,

means for accelerating the conveyor,

compactor means overlying the conveyor,

means for moving the compactor means away from and toward the conveyor surface for positioning the compactor means at a variety of positions remote from and closely adjacent to the conveying surface, and

undriven mounting means for mounting the compactor means on said positioning means for allowing free unpowered unrestricted movement over the conveying surface along a path parallel to the conveying surface when the compactor means is in engagement with the article thereby holding the article against the conveying surface and being moved along said path solely by the article.

4,201,128

APPARATUS FOR THE COMPACTING AND TREATMENT OF MATERIALS SUCH AS SHREDDED PAPER

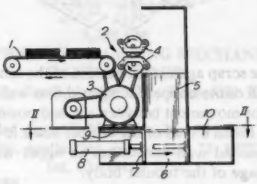
Gareth D. J. Whitehead, 6 Haven Rd., and Thomas H. Gardner, 8 Haven Rd., both of St. Thomas Exeter EX28BP, England

Filed Sep. 5, 1978, Ser. No. 939,685

Claims priority, application United Kingdom, Sep. 2, 1977, 36704/77; Feb. 10, 1978, 5375/78

Int. Cl.² B30B *15/30, 15/08*

U.S. Cl. 100—45 **4 Claims**



1. Apparatus for the shredding, compacting and packing of paper, particularly waste newspapers, said apparatus comprising,

(a) means for shredding sheets of paper,

(b) guide means for feeding paper sheets to be shredded to the said shredding means,

(c) a press having a compaction chamber,

(d) means for delivering shredded paper from the said shredding means to the compaction chamber of said press,

(e) a fluid pressure-actuated compacting ram movable through the compaction chamber and adapted to compact shredded paper therein,

(f) an ejection chamber arranged to receive compacted shredded paper from the compaction chamber, the discharge end of the ejection chamber having a bag placed thereover, the bag forming one wall of the ejection chamber,

(g) an ejection device for ejecting shredded paper from the ejection chamber and into said bag,

(h) means responsive to fluid pressure in said compacting ram to provide an enabling output only when said fluid pressure which actuates the ram reaches a predetermined threshold value corresponding to a desired degree of compaction of the shredded paper,

(i) control means operable in response to said enabling output to enable the said ejection device for operation thereafter when the said ram reaches a predetermined limit position of its compacting stroke.

4,201,129

MACHINE FOR CHARGING FURNACES

Pierre Matthys, Marne la Coquette, France, assignor to Etablissements Matthys and Societe G.A.R.A.P., Rouen, France

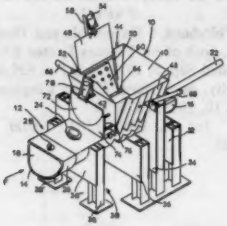
Filed Apr. 3, 1979, Ser. No. 26,756

Int. Cl.² B30B *7/00*

U.S. Cl. 100—233 **6 Claims**

1. A machine for charging furnaces with scrap to be incinerated comprising, a hopper for receiving various types of bulk scrap to be incinerated, said hopper having an open bottom, a rectilinear and horizontal tubular body having opposite ends, one of said ends being connected to the inlet of a furnace, said tubular body having an intermediate portion with an open top which communicates with said open bottom of the hopper, a push member slidably mounted in said tubular body, said tubular body having an interior passage which is substantially equal to that of said push member, said hopper having a first lateral

wall constituted by a trap door capable of being raised and lowered, a crushing head pivotably connected to said hopper, said head being exposed when said lateral wall is raised and covered by said lateral wall when said wall is lowered, means for pivotably lowering said head with said trap door raised to



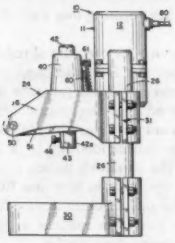
compress the scrap against the bottom of the tubular body, and a second wall of the hopper facing said first wall and pivotably connected for movement between a raised position where said second wall forms a wall of the hopper and a lowered position where the second wall constitutes an upper wall closing the interior passage of the tubular body.

4,201,130

FLUID-OPERATED PRESS

Alfred R. Stahl, Chapala-Jocotepec, Mexico, assignor to Michael P. Breston, Houston, Tex., a part interest

Filed Mar. 26, 1979, Ser. No. 24,217
Int. Cl.[2] B30B *1/08*
U.S. Cl. 100—271 **3 Claims**



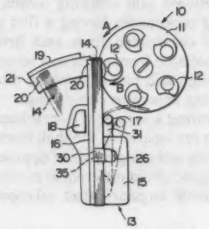
1. A fluid-pressure actuated press comprising:
(a) a column structure;
(b) a ram having a piston and an associated piston rod, the free end of the piston rod reciprocating downwardly;
(c) a support adjustably supporting the ram on the column structure;
(d) a lever bar having a proximate free end in engagement with the free end of the piston rod, the distal end of the lever bar being pivoted about a fixed fulcrum carried by the support; and
(e) a chuck rod slidably mounted relative to the support along an axis which is substantially parallel to the axis of the piston rod, the chuck rod being pivotably associated with the lever bar at a point intermediate the ends of the lever bar whereby the force of the ram produced on the piston rod is multiplied by the lever and is reproduced on the chuck rod.

4,201,131

SEALING DEVICE FOR USE IN A NOTE COUNTING MACHINE

Tuyoshi Miyagawa; Eiichi Kokubo, and Minoru Yoshida, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1978, Ser. No. 951,142
Int. Cl.[2] G06M *9/02*; B41K *5/08*
U.S. Cl. 101—4 **3 Claims**



1. A sealing device for use in a note counting machine wherein a bunch of notes wrapped by a sealing tape is held by a note holder in a counting section of the note counting machine and the notes composing the bunch are counted by being deflected one at a time by suction shafts provided on a rotary cylinder which comprises,
a note holder mounting on a rotary shaft adjacent to the rotary cylinder and including a note supporting plate for supporting the bunch of notes and an upstanding plate vertically connected to said note supporting plate, said note supporting plate being provided with an arcuate slot about said rotary shaft,
a supporting arm pivotably mounted on said rotary shaft and including a vertical pressing rod provided on the end of the supporting arm and a cylinder portion which substantiary lies below said arcuate slot of said note supporting plate, said pressing rod vertically holding the bunch of notes together with said upstanding plate of said note holder,
a seal impression rigidly mounted within a seal impression holder which is positioned within said cylinder portion of said supporting arm and is vertically movable through said arcuate slot, and
means for vertically driving said seal impression holder to affix a seal on a sealing tape of the bunch of notes at the bottom side thereof.

4,201,132

METHOD OF AN APPARATUS FOR EQUALIZING LONGITUDINAL STRESSES IN AN ADVANCING WEB

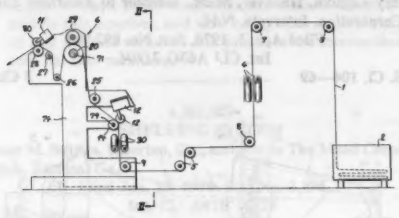
Peter Zimmer, and Hans Kudlich, both of Kufstein, Austria, assignors to Maschinenfabrik Peter Zimmer Aktiengesellschaft, Kufstein, Austria

Filed Apr. 28, 1978, Ser. No. 880,366
Int. Cl.[2] B41L *13/00*
U.S. Cl. 101—118 **10 Claims**

1. An apparatus for equalizing longitudinal stresses in a web of flexible material advancing along a predetermined path, comprising:
central roller means extending transversely across said path;
main drive means for rotating said central roller means to entrain a web engaged thereby;
two lateral roller pairs positioned to engage opposite longitudinal edges of said web at a location upstream of said central roller means;
separate ancillary drive means for independently rotating said lateral roller pairs in substantial synchronism with said central roller means and at peripheral speeds having velocity components parallel to said longitudinal edges

approximately equaling the speed of the entrained web at said longitudinal edges;

individual mounting means for each of said lateral roller pairs enabling limited displacement thereof in a direction generally parallel to said longitudinal edges in response to any deviation of said velocity components from the web speed at the respective longitudinal edges; and



switch means coupled to said mounting means for varying the speed of said ancillary drive means upon a displacement of either of said lateral roller pairs generally parallel to said longitudinal edges from a predetermined position in a sense tending to return the respective lateral roller pair to said predetermined position thereof.

4,201,133

PRINTING PRESSURE DAMPING MECHANISM FOR HAND LABELER

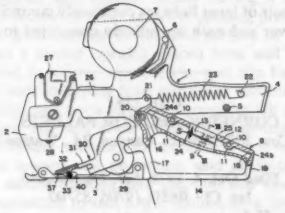
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed Apr. 4, 1978, Ser. No. 893,332

Claims priority, application Japan, Apr. 12, 1977, 52/44806[U]

Int. Cl.[2] B41J 5/00

U.S. Cl. 101—288 **11 Claims**



1. A printing pressure damping mechanism for use with an apparatus for imprinting a label, or the like, comprising:

a support frame a printing platen for supporting a label, or the like, to be imprinted; said platen being supported by said frame;

an operating lever movable between a released position and a squeezed position; said operating lever being supported by said frame for movement, with respect to said frame, between said inoperative and said printing positions;

a printing head attached to said operating lever and movable thereby between an inoperative position apart from said platen, when said operating lever is at said released position, and a printing position against said platen, when said operating lever is at said squeezed position;

an auxiliary lever having at least a portion thereof spaced from said operating lever and movable with respect to said operating lever; said auxiliary lever being so placed with respect to said operating lever such that motion of said auxiliary lever in one direction urges said operating lever to said squeezed position thereof;

first shock-absorbing means connecting said operating lever and said auxiliary lever and biasing said operating and said auxiliary levers apart; said auxiliary lever being biased away from said one direction thereof, whereby force on said operating lever, through said auxiliary lever, is damped and thereby damps the pressure on said platen that is exerted by said printing head moving to said printing position thereof;

second shock-absorbing means between said frame and said platen for biasing said platen toward said printing head and for absorbing impact of said printing head against said platen, thereby further damping printing pressure of said printing head; said second shock-absorbing means comprising a compression spring between said platen and said frame and compressible by motion of said platen under influence of said printing head at said printing position thereof.

4,201,134

PRINTING PRESSURE DAMPING MECHANISM FOR HAND LABELER

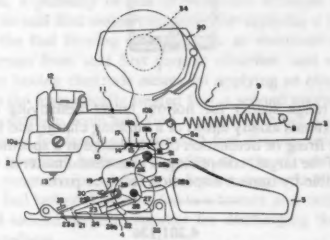
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,489

Claims priority, application Japan, Apr. 22, 1977, 52-045832

Int. Cl.[2] B41F 1/54

U.S. Cl. 101—288 **26 Claims**



1. A printing pressure damping mechanism for a hand labeler, or the like, comprising:

a frame;

a platen pivotally mounted to said frame at a platen pivot on said frame; said platen having a printing portion at one side of said pivot and said printing portion being pivoted as said platen is pivoted; said platen having another side at the other side of said pivot from said printing portion;

an operating lever movable with respect to said frame between a released position and a squeezed position; at said released position, said operating lever being spaced apart from said platen other side; said operating lever being movable toward engagement with said platen other side;

a printing head carried by said operating lever and movable with said operating lever between an inoperative position wherein said printing head is apart from said printing portion of said platen when said operating lever is at said released position, and a printing position of said printing head wherein said printing head abuts said platen printing portion, when said operating lever is at said squeezed position;

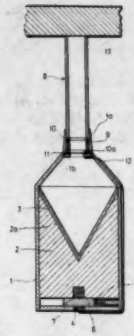
shock-absorbing means interposed between said operating lever and said platen other side, such that motion of said operating lever toward said squeezed position causes engagement between said operating lever and said platen other side through said shock-absorbing means, and further motion of said operating lever to said squeezed position biases said platen other side to move said platen printing portion to pivot toward said printing head; said shock-absorbing means being adapted to absorb force applied by said operating lever against said shock-absorbing means,

whereby the squeezing force of said operating lever against said platen is damped.

4,201,135
HOLLOW CHARGE CONSTRUCTION AND RANGE SPACER THEREFOR

Peter Nikowitsch, Mühlried, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,594
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710612
Int. Cl.[2] F42B *1/02, 13/10*
U.S. Cl. 102—56 SC 12 Claims

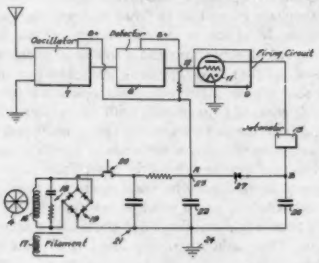


1. A range spacer for hollow target destroying charges, which extends axially ahead of a bursting charge and serves to time the firing or detonation of the charge at a specified range ahead of the target, comprising, a prestressed material which is destructible by impact dispersion to piece parts.

4,201,136
SAFETY CONTROL FOR ELECTRONIC CIRCUITS

George V. Morris, Chicago, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 19, 1951, Ser. No. 206,756
Int. Cl.[2] F42B *13/04*
U.S. Cl. 102—214 3 Claims

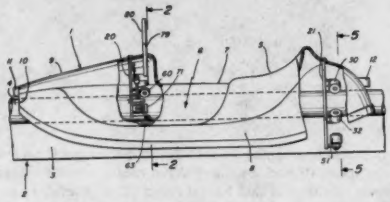


1. An electronic control circuit, a plate supply for said circuit, an electronic grid-controlled power tube controlled through its grid by the output of said control circuit, a translating device energize by said power tube in response to the output of said control circuit, a condenser connected to serve as a plate supply source for said power tube, circuit connections for charging said condenser from said plate supply, an unsymmetrical resistance in said circuit connections arranged to offer a high impedance to passage of charging current from said first plate supply to said condenser, but to offer low impedance to discharge of said condenser into the plate supply, whereby upon reduction of said plate supply voltage below a safe operating level, said condenser voltage will be rapidly reduced to a value below the operating value.

4,201,137
SLED AND SLIDE CONSTRUCTION

Andry Lagsdin, Hanover, Mass., assignor to American Zephyr Corporation, Intervale, N.H.

Filed Apr. 3, 1978, Ser. No. 892,988
Int. Cl.[2] A63G *21/04*
U.S. Cl. 104—69 3 Claims

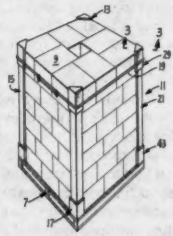


1. A sled for use on a monorail slide, the rail having a cross-sectional configuration in the form of at least a segment of a tubular member and a web extending from said tubular member, comprising a shell, said shell having a passenger seat intermediate its ends, forward and rear bulkheads each having its periphery secured to the inner surface of said shell, a pair of wheel means, said wheel means each comprising a plurality of radially arranged wheels supporting and guiding said shell on said monorail, means supporting one of said wheel means on the forward and the other wheel means on the rear bulkheads, brake means having brake pads, means supporting said brake means on said forward bulkhead with said brake pads positioned forward of said seat to operatively engage said tubular member intermediate said wheels of said wheel means on said forward bulkhead, said brake means including an operating lever and a pair of lever linkages commonly controlled by said operating lever and each operatively connected to said brake pad.

4,201,138
CORNERBOARD FOR PALLETS

Clayton E. Cox, 1371 Eureka Canyon Rd., Watsonville, Calif. 95076

Filed Oct. 4, 1978, Ser. No. 948,546
Int. Cl.[2] B65D *19/06, 85/00*
U.S. Cl. 108—55.1 3 Claims



1. A corner structure for a pallet comprising in combination:
a. a top member, said member having a top cap adapted to extend over the corner of a loaded pallet and having a top side member extending downward from the top cap, said top side member being composed of two flat elements held at right angles to each other and each having a slot

therein, each said slot being open only at the bottom of said flat elements and joined at the intersection of said flat elements;

b. a middle side member, said middle side member having two thin elements maintained in a right angle configuration to fit into the slots in said top side member, and

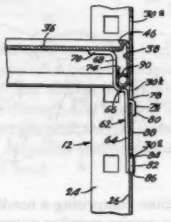
c. a bottom member of substantially the same configuration as the top member having flat side members held at right angles to each other with enclosed slots to receive the middle side member, said slots being open only at the top of said flat side members and joined at the intersection of said flat side members.

4,201,139

SHELVING SYSTEM

James M. Suttles, Elberton, Ga., assignor to The Mead Corporation, Atlanta, Ga.

Filed Jan. 15, 1979, Ser. No. 3,498
Int. Cl.² A47B 57/24
U.S. Cl. 108—109 **2 Claims**



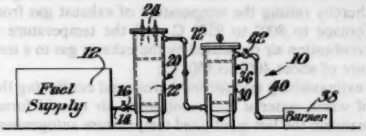
1. A system of shelving comprising at least one shelf having a supporting surface, support means for holding said shelf in a fixed position above a floor, said support means having front and rear surfaces, and clip means located adjacent said front surface of said support means for securing said shelf to said support means, said support means having a first opening adapted to receive a hook, said first opening providing access from said front surface to the rear surface of said support means, and a second opening spaced from said first opening and adapted to receive a projection, said clip having a lower section, a hook extending from said lower section through said first opening, said hook having a depending tab engaging said rear surface, and said lower section also having a projection spaced from said hook in a direction such that said depending tab points toward said projection, said projection extending into said second opening, and said clip also having an upper section connected to said lower section by a horizontally extending clip section and offset from said lower section so that it is spaced from said front surface, and extending from said horizontally extending clip section in generally parallel relation to said front surface in a direction opposite to the direction in which said depending tab extends, said upper section having horizontally extending means at its upper end engaging the underside of said shelf and said shelf having apron means extending between said front surface and said upper section the space between said upper section and said front surface being such that, when said apron is located between said upper section and said front surface, said upper section is urged away from said front surface, and said projection is urged into said second opening whereby said hook cannot become disengaged from said first opening while said apron is in place between said upper section and said front surface of said support means and in which said apron means is provided with a rolled lower edge located below said supporting surface and above and spaced from said horizontally extending clip section, and projecting in the direction away from said front surface of the support means and in which said upper section is provided with rounded projecting means projecting toward said front surface, said rolled edge and said rounded projecting means being in engagement with each other, with at least part of said rolled edge being located below at least part of said rounded projecting means whereby said shelf is removably secured against upward vertical movement away from said clip means.

4,201,140

DEVICE FOR INCREASING EFFICIENCY OF FUEL

T. Garrett Robinson, P.O. Box 128, Galena, Md. 21635

Filed Apr. 30, 1979, Ser. No. 34,411
Int. Cl.² F23K 5/00
U.S. Cl. 110—218 **19 Claims**



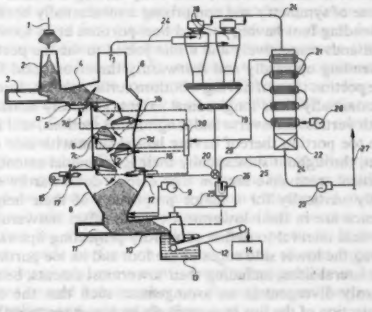
1. A device for increasing the efficiency of fuel comprising an inlet chamber into which the fuel is fed, a first magnet chamber disposed downstream from said inlet chamber, distributor means connecting said inlet chamber to said first magnet chamber for feeding the fuel from said inlet chamber into said first magnet chamber in a predetermined array of spaced locations, a plurality of sets of vertically arranged magnets located in said first magnet chamber for applying a magnetic flux to the fuel flowing therethrough, an electrode chamber downstream from said first magnet chamber, said electrode chamber having electrode means for applying an electrostatic force to the magnetically treated fuel, a second magnet chamber downstream from said first magnet chamber and having inlet means for feeding the treated fuel therein, said second magnet chamber having a plurality of sets of vertically arranged magnets for applying a further magnetic flux to the treated fuel before the fuel is fed to a burner, and outlet means for said second magnet chamber for discharging the treated fuel therefrom.

4,201,141

METHOD OF AND APPARATUS FOR INCINERATING RESIDENTIAL WASTE

Constantin Teodorescu, and Radu Polizu, both of Bucharest, Romania, assignors to Institutul National Pentru Creatie Stiintifica si Tehnica-Increst, Bucharest, Romania

Filed Mar. 29, 1978, Ser. No. 891,196
Claims priority, application Romania, Apr. 18, 1977, 90060
Int. Cl.² F23G 5/04
U.S. Cl. 110—259 **4 Claims**



1. A method of incinerating residential waste material which comprises the steps of:

(a) initially heating a vertical furnace with a liquid-fuel

burner to produce combustion gases at a temperature at an outlet from said furnace of substantially 450° to 500° C.;

(b) preheating combustion air with exhaust gase from said furnace to a temperature of 200° and 250° C. and admitting said combustion air to said furnace at least in part through hollow tilting elements vertically staggered in said furnace;

(c) simultaneously with step (b) passing quantities of waste material downwardly through said furnace on said tilting elements and burning the waste material with said combustion air and concurrently firing said furnace by a second burner with liquid fuel supplied at a lower rate than in the first mentioned burner, said first burner being cut off, thereby raising the temperature of exhaust gas from said furnace to 800° to 950° C. and the temperature of the combustion air preheated by the exhaust gas to a temperature of about 400° to 450° C.;

(d) extinguishing said second burner and continuing the feed of waste material and combustion air to said furnace to maintain the last mentioned temperature autogenous combustion of the waste material;

(e) collecting ash below said tilting elements in said furnace; and

(f) cooling said ash with air and permitting the air used to cool the ash to rise in said furnace.

4,201,142

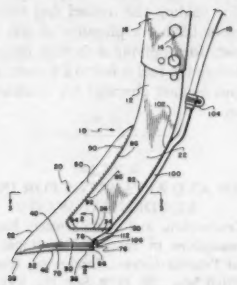
AMMONIA APPLICATOR BLADE

Lee K. Stump, Belleville, Kans., assignor to Ausherman Manufacturing Co., Inc., Belleville, Kans.

Filed Jul. 17, 1978, Ser. No. 925,209

Int. Cl.[2] A01C *23/02*

U.S. Cl. 111—7 **6 Claims**



1. A point for use in ammonia applicator blades, said point comprising a unitary metallic body having a minimum hardness of about 500 BHN, said body having a medial vertical plane of symmetry and comprising a substantially horizontally extending foot having toe and heel portions at its forward and rear ends respectively and a shin joined to the toe portion and extending upwardly and rearwardly therefrom, said foot and toe portion thereof having a bottom surface that is, throughout substantially their longitudinal extent, generally horizontal in both vertical transverse and longitudinal sections, said foot and the toe portion thereof having lateral sides with side surfaces that, throughout substantially their longitudinal extent, have a vertical transverse section that extend downwardly substantially vertically for a major proportion of their height and thence are in their lowermost extents offset outwardly for a vertical interval to define outwardly projecting lips extending along the lower side edges of the foot and its toe portion, with the lateral sides, including their lowermost extents, being rearwardly divergent in an arrangement such that the outward projection of the lips progressively increases rearwardly along the foot and its toe portion, said shin and its juncture with the toe portion being contoured to present in vertical profile a reclining V-shaped configuration and to present in horizontal section substantially throughout their heights a generally ogive forward configuration, said heel portion being notched to define a rear surface for the foot that extends upwardly substantially vertically from the bottom surface of the foot to a position above the lips of the latter, and which thence extends upwardly and rearwardly to the top of the foot in approximate parallelism with the shin, and said shin having a rear surface and the foot having a top surface that jointly define an opening of a generally reclining V-shape adapted to receive a blade shank therein.

4,201,143

CAM DRIVEN SLIDING NEEDLE BAR

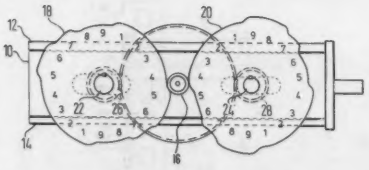
Stanley P. Jackson, Shipley, England, assignor to Firth Carpets Limited, Brighouse, England

Filed Jul. 17, 1978, Ser. No. 925,152

Claims priority, application France, Jul. 18, 1977, 77 22995; Jun. 20, 1978, 78 19400

Int. Cl.[2] D05C *15/00*

U.S. Cl. 112—79 R **5 Claims**



1. A tufting machine comprising a needle bar, an apertured, elongate needle bar carrier member connected to said needle bar, guide means mounting said needle bar carrier member for longitudinal movement therein, a pair of longitudinally spaced cams of conjugate shape situated at one side of said needle bar carrier member, cam drive means situated on the other side of said carrier member and including respective drive shafts for mounting said cams, said drive shafts passing through the apertures in the needle bar carrier member, and a centrally situated cam follower member secured directly to and carried by said needle bar carrier member between said cams and having diametrically opposed regions engaged directly by said cams, and said needle bar carrier member being displaceable in response to rotation of said cams by said drive shafts to effect said longitudinal movement of said needle bar carrier member in said guide means.

4,201,144

CONTROL SYSTEMS FOR AUTOMATIC SEWING MACHINES

Takao Manabe, Sunto; Shigetugu Matunaga, Numazu, and Shinji Machi, Mishima, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1978, Ser. No. 895,652

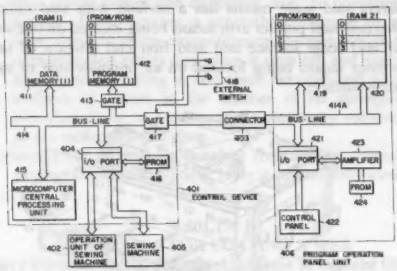
Claims priority, application Japan, Apr. 15, 1977, 52-43803

Int. Cl.[2] D05B *21/00*

U.S. Cl. 112—121.12 **19 Claims**

1. A control system of an automatic sewing machine of the type having a sewing head mounted on a table, cloth clamping plates, cloth clamping plates driving means including pulse motors for moving said cloth clamping plates on said table in X and Y axis directions of rectangular coordinates, and pulse generating means, for applying driving pulses to said pulse motors, characterized in that said control system comprises first memory means including a first code region representing the type of control corresponding to a predetermined number of addresses and a second code region to store data required for respective sewing steps; a sewing machine operation panel unit including means for generating control signals for controlling the operation of said sewing machine; a bus line extending between said first memory means and said sewing machine

operation panel unit; second memory means connected to said bus line and including a first memory region for storing drive pulses supplied to said pulse motors and said control signals, and a second region for storing data corresponding to an address count value which designates an address of said first memory means, and for storing the type of control and the data in said second code region of said first memory means; a central processor unit connected to said bus line; and a third memory means in the form of a programmable memory means connected to said first and second memory means and to said central processor unit through said bus line, said third memory means containing a program of various instruction groups for sequentially forming operation instructions for operating said pulse motors and said head.

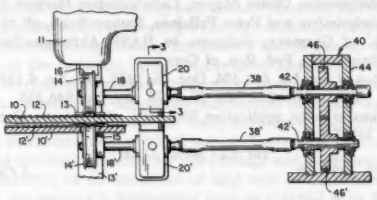


4,201,145

SEW LENGTH CONTROL AND MEASURING APPARATUS

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.

Filed May 19, 1978, Ser. No. 907,800
Int. Cl.[2] D05B 27/16
U.S. Cl. 112—306 **10 Claims**



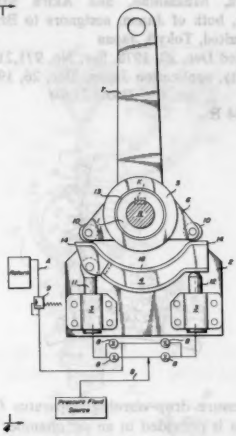
1. In combination with a sewing machine of the type having reciprocating feed dog means for drawing one or multiple limp workpieces through the sewing machine, apparatus for controlling the lengths of the workpieces as they are drawn through the sewing machine, the controlling apparatus comprising a pair of wheels, means for separately, rotatably supporting the wheels and for biasing each of them into rolling engagement with a separate one of the workpieces, means for intercoupling the wheels to control the rotational velocity of one of the wheels as a proportion of the rotational velocity of the other wheel, and wherein the controlling apparatus is attached to the sewing machine ahead of the feed dog means taken in the direction of travel of the workpieces through the sewing machine.

4,201,146

DEVICE FOR RELIEVING THE RUDDER SHAFT IN SHIPS

Bilen Branislav, Kursulina 5, 11000 Beograd, Yugoslavia

Filed May 1, 1978, Ser. No. 901,981
Claims priority, application Yugoslavia, Jun. 6, 1977, 1401/77
Int. Cl.[2] B63H 25/06
U.S. Cl. 114—163 **2 Claims**



1. Apparatus for disconnecting from the steering mechanism of a ship one of a plurality of rudders when the rudder is in a jammed condition, each of said rudders having a generally vertical shaft, comprising

(a) an annular hub member (1) adapted for mounting in keyed relation concentrically about said one rudder shaft;

(b) a plate (2) rigidly secured to and extending normal to the axis of said hub member;

(c) a pair of pressure fluid piston-cylinder motors (3) mounted in spaced parallel relation on said plate, the axes of said motors being parallel to said plate and being arranged on opposite sides of, and parallel to, a first plane which is normal to said plate and which contains the longitudinal axis of said hub member, the piston rods (11, 12) of said motors extending generally in the direction of said hub;

(d) a guide member (4) pivotally connected at one end with the free end of one (11) of said pistons, said guide member being generally parallel with said plate and being spaced from said hub member, the other end of said guide member being in engagement with, and supported by the free end of, the other (12) of said pistons, the face (14) of said guide member adjacent said hub member being planar and normal to said first plane, said guide member planar face containing adjacent its center a semi-circular recess (18);

(e) an annular tiller ring (5) rotatably mounted concentrically about said hub member, said tiller ring including a stirrup portion (6) carrying a pair of rollers (10) adjacent the planar face of said guide member on opposite sides of said recess, respectively;

(f) a tiller member (7) rigidly connected with said tiller ring;

(g) means including one-way valve means (8) for normally supplying pressure fluid to said motors to force said piston rods and said guide member toward said hub member to a position in which said rollers engage portions of said planar guide surface on opposite sides of said recess, whereby pivotal movement of said tiller member is conducted to said hub member via the engagement between said rollers and said guide plate; and

(h) pressure-responsive safety valve means (9) for releasing pressure fluid from said motors when the fluid pressure thereof exceeds a predetermined value, whereby in the

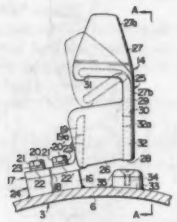
event that the rudder is in a jammed condition, pivotal movement of the tiller member causes operation of the safety valve means to vent the motors to disable the guide member relative to said rollers.

4,201,147

TIRE PRESSURE DROP WARNING APPARATUS

Norio Goshima, Musashino, and Akira Matsuda, Higashimurayama, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,214
Claims priority, application Japan, Dec. 26, 1977, 52-156939
Int. Cl.[2] B60C *23/04*
U.S. Cl. 116—34 B **4 Claims**



1. A tire pressure drop-warning apparatus for a vehicle, which apparatus is provided in an air chamber defined by a pneumatic tire and a wheel rim assembled with said pneumatic tire so as to mechanically strike said wheel rim for emitting an alarm-giving sound when the tire inner pressure drops in said air chamber below an allowable limit, comprising in combination:

a securing member secured to said wheel rim;

a blow-striking hammer provided spacedly from said securing member in the direction perpendicular to the radial direction of said wheel rim; and

a connecting member made of a resilient material and having one end connected with the radially outer end of said securing member and the other end connected with said blow-striking hammer;

said blow-striking hammer having at its radially outer end a protrusion extending radially outwardly from the radially outer end of said connecting member said blow-striking hammer having at its radially inner end a blow-striking portion for striking said wheel rim, so that when the wheel is rotated in use the inner surface of said pneumatic tire is periodically brought into pressed engagement with the radially outer end of said protrusion if when said tire inner pressure is dropped in said air chamber below said allowable limit the connecting member is thereby caused to be shearingly and bendingly deformed so that the blow-striking portion will strike said wheel rim to themselves alone emit said alarm-giving sound discernable over other noises of said vehicle.

4,201,148

POINTER AND SCALE INDICATING ASSEMBLY

Frank W. Bizzak, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 29, 1978, Ser. No. 964,756
Int. Cl.[2] G01D *13/22*; H03J *1/02*
U.S. Cl. 116—241 **16 Claims**

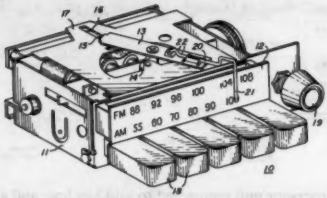
1. An improved pointer and scale indicating assembly comprising:

scale means, with indicia thereon, fixedly mounted in said chassis;

pointer arm means moveably mounted in said chassis, the position of said pointer arm means with respect to said chassis corresponding to a quantity which it is desired to visually display; and

pointer means mounted on said pointer arm means for integral movement therewith and having first and second end portions, said first end portion visually cooperating with said scale means to produce a visual indication of the position of said pointer arm means with respect to said chassis;

wherein said scale means has a surface with said indicia thereon, said pointer arm means being located on one side of said scale surface and said first end portion of said pointer means being located on an opposite side of said scale surface;



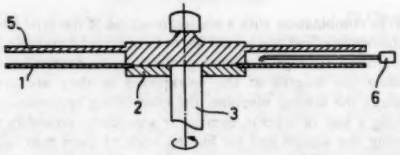
wherein the improvement comprises said pointer arm means having a first planar surface with at least one holding projection rising thereabove and a raised surface including a ramp rising above said first planar surface, said second end portion of said pointer means being at least partially resilient and being slidably hand insertable onto said pointer arm means with said projection holding a part of said second end portion of said pointer means and said ramp of said raised surface contacting and flexing said second end portion of said poihter means during the slidable hand insertion thereof to create a retaining force maintaining said second end portion in contact with said raised surface and said projection, thereby attaching said pointer means to said pointer arm means.

4,201,149

APPARATUS FOR SPIN COATING IN THE PRODUCTION OF THIN MAGNETIC LAYERS FOR MAGNETIC DISCS

Eberhard Koester, Frankenthal; Paul Deigner, Weisenheim; Roland Falk, Achern; Karl Uhl, Frankenthal; Dieter Schaefer, Ludwigshafen; Dieter Mayer, Ludwigshafen; Herbert Motz, Ludwigshafen, and Peter Felleisen, Lampertheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 641,356, Dec. 16, 1975, Pat. No. 4,133,911.
This application Sep. 27, 1978, Ser. No. 946,355
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1974, 2459541
Int. Cl.[2] B05C *11/08*
U.S. Cl. 118—52 **4 Claims**



4. An apparatus for spin coating, in the production of thin magnetic layers for magnetic discs, a rigid base disc with a pourable dispersion of magnetic materials in a binder mixture, said apparatus comprising:

variable-speed drive means for rotating said base disc,

means for applying said dispersion to said base disc while

said drive means are rotating said disc at a relatively slow speed,

a rigid, generally disc-shaped member, and

means for attaching said member to said base disc for rotation therewith and in closely spaced parallel-planar relation thereto at least while said drive means rotate said disc at a relatively high speed during the spin-coating operation, so as to define between the flat surface of said base disc, which carries said dispersion, and the opposing flat surface of said member, a generally cylindrical air space open along its entire circumference, through which open circumference excess dispersion is spun off, and cause the air column extending in said space between said two flat surfaces to rotate, in the manner of an aerodynamic boundary layer, in a substantially stationary relationship to the surface of said disc,

whereby the formation of surface irregularities during the production of said magnetic layer is substantially avoided.

4,201,150

APPARATUS FOR COATING A WEB

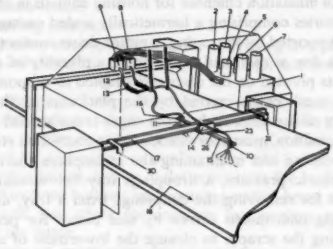
Harry Edwards, Blackley, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 818,266, Jul. 22, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,258

Claims priority, application United Kingdom, Apr. 13, 1977, 15284/77

Int. Cl.² B05C *5/00*

U.S. Cl. 118—323 **10 Claims**



1. Apparatus for dispensing a liquid reaction mixture onto web or sheet material which comprises a frame constructed to be mounted above advancing web or sheet material, said frame having guide means supporting a carriage which is arranged to be driven in a reciprocating fashion in a line of motion transverse to the direction of advancement of said web or sheet material, and a distributor connectable to a supply of liquid reaction mixture for depositing said mixture onto said web or sheet material, said distributor being attached to said carriage by an attachment device which permits limited free movement of said distributor relative to said carriage and transversely to the direction of advancement of said web or sheet material when the carriage is decelerated prior to reversal of its direction of motion.

4,201,151

APPARATUS AND METHODS OF COATING FILAMENTS WITH POLYMERS

Mokhtar S. Maklad, and Pablo C. Pureza, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 17, 1978, Ser. No. 896,842

Int. Cl.² B05B *5/00*

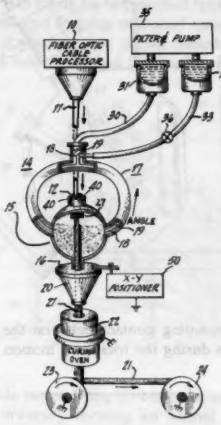
U.S. Cl. 118—642 **12 Claims**

1. Apparatus for uniformly coating an elongated member with a polymer formed by the mixing of a first base component and a second catalyst component comprising:

a mixing vessel having an inlet and outlet port along a given axis, each communicating with an internal hollow of said vessel and adapted to receive the elongated member;

first and second component ports relatively transverse to said inlet and outlet ports and each communicating with said internal hollow;

an annular tubular delivery means coupled between component ports, said means including an outer tube adapted to receive one of said components and an inner coaxial tube



adapted to receive said other component, said annular tubular means directed at a predetermined angle with respect to said axis of said inlet and outlet ports; and

means for moving said elongated member at a predetermined rate through said inlet and outlet ports and hence, through said hollow of said vessel to cause mixing and agitation of said components as delivered to said hollow by said delivery means to cause said elongated member as directed to be coated with said polymer.

4,201,152

TRANSFER AND TEMPERATURE MONITORING APPARATUS

Paul E. Luscher, Sunnyvale, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 27, 1978, Ser. No. 881,340

Int. Cl.² C23C *13/08*; H01L *21/68*

U.S. Cl. 118—712 **19 Claims**

1. Apparatus for monitoring the temperature of an object located at a treating station and for enabling the object to be transferred from a carriage to the treating station, and vice versa, said apparatus comprising:

a metal holder for the object,

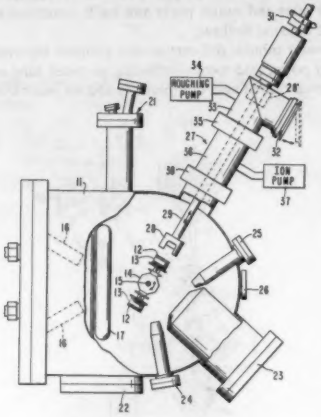
first and second metal contact pins at the treating station, said pins being arranged to selectively contact a surface of the holder, said first contact pin and surface when contacting forming a first thermocouple junction, said second contact pin and surface when contacting forming a second thermocouple junction, said junctions having dissimilar properties so that a voltage indicative of the temperature of the object is derived between them while the pins and surface contact each other,

said treating station including means for selectively fixedly holding the holder,

said carriage including means for selectively fixedly holding the holder,

said treating station and carriage including means for transferring the holder between the carriage and the treating station, said transferring means including means for providing translational and rotational motion between the

holder and the treating station during a transfer of the holder, and



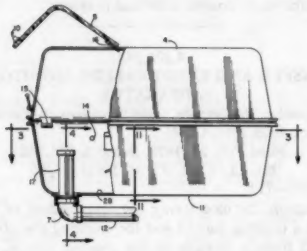
means for preventing contact between the holder surface and the pins during the rotational motion.

4,201,153

ANIMAL ENCLOSURE SYSTEM

George W. Nace, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Mar. 27, 1978, Ser. No. 890,520
Int. Cl.[2] A01K *61/00, 64/00*
U.S. Cl. 119—3 14 Claims



1. An animal enclosure comprising a pan having a bottom surface and sides, a top having an upper surface and sides, said top being configured to coincide with said pan, said top being selectively removeable from said pan, a drain extending from the interior of said pan to an external drain line,

said pan being adapted to receive and retain against lateral movement a selective plurality of shelves, said shelves being at different levels with respect to each other, and being provided with means for animal access from one said shelf to another and to the said bottom surface of said pan,

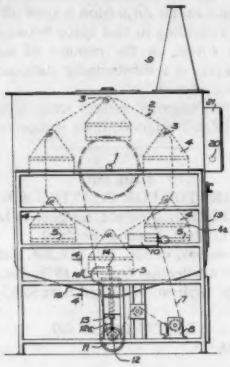
said means to receive and retain said shelves including a plurality of studs and a plurality of indexing means, each of said studs at least partially supporting one shelf, when a shelf is positioned over said stud, and each indexing means coacting with a portion of one shelf when a shelf is positioned adjacent said indexing means, to prevent lateral movement of said shelf.

4,201,154

CHAMBERS FOR HOUSING ANIMALS IN TOXYCOLOGY LABORATORIES

Eric Gowrie, Knutsford, England, assignor to E. Gowrie Limited, Manchester, England

Filed May 12, 1978, Ser. No. 905,469
Claims priority, application United Kingdom, May 13, 1977, 20154/77
Int. Cl.[2] 119 *22;* A01K *1/03*
U.S. Cl. 119—15 4 Claims



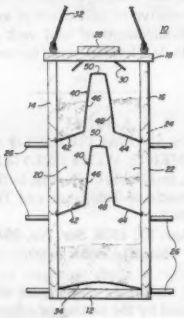
1. An inhalation chamber for housing animals in toxycology laboratories comprising a hermetically sealed casing, a rotary shaft supported by the casing, a motor drive connected to said shaft, a disc at each end of the shaft, a plurality of platforms, brackets pivoted on the discs and adapted to support the platforms, mesh cages carried by the platforms so that during rotation of the discs each of the cages is maintained in a horizontal position, means for introducing a controlled atmosphere to the casing and maintaining the atmosphere therein below atmospheric pressure, a droppings tray below each cage, a scraper for removing the droppings from a tray, and means including cam means driven by said motor for periodically activating the scraper to cleanse the lowermost of said droppings trays.

4,201,155

BIRD FEEDER

Donald B. Hyde, Jr., Waltham, Mass., assignor to Hyde's Incorporated, Waltham, Mass.

Filed Aug. 11, 1977, Ser. No. 823,786
Int. Cl.[2] A01K *39/01*
U.S. Cl. 119—51 R 8 Claims



1. In a bird feeder comprising a relatively elongated housing

for holding a supply of bird feed and having a plurality of feeding apertures located at different heights thereon:

the improvement of providing means for retaining supplies of bird feed at feeding apertures located at different heights, said means for retaining including at least one baffle for retaining seed at the height of the baffle independent of a lower level, said baffle permitting some seed to pass to the lower level.

4,201,156

LIVE POULTRY CONVEYING, COUNTING AND CRATING DEVICE

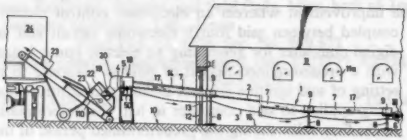
Werner Kühler, Post Hennstedt, D-2246 Norderheistedt, über Heide, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,748

Claims priority, application Fed. Rep. of Germany, May 25, 1977, 2723686

Int. Cl.[2] A01K *29/00*

U.S. Cl. 119—82 **4 Claims**



1. A live poultry conveying, counting and crating device comprising:

(a) a chicken house;

(b) a counting station;

(c) live poultry conveying means for conveying live poultry inside and out of the chicken house through said counting station;

(d) a loading chute having a bottom downwardly inclined at an acute angle on which said live fowl can slide downwardly, an inlet opening at the upper end of the latter and adapted for receiving live poultry from said live poultry-conveying means, and an outlet opening at the lower end of said inclined bottom; said counting station being associated with said chute for counting live poultry passing down the latter;

(e) a transport mechanism for transporting empty coops having an aperture in their top face to the outlet opening of said chute and coops filled with live poultry away from said outlet opening of said chute;

said transport mechanism comprising means for stopping each coop as it arrives at said outlet opening for a time sufficient to fill said coop with a determined number of live poultry, tilting means for tilting each coop as it sojourns at said outlet opening of said chute, at an angle whereby said aperture of said coop is inclined by an acute angle toward said outlet opening, and

wherein the angle of inclination of the coop, when in tilted position, toward the outlet opening of said chute is about 25 to 50 degrees toward the horizontal plane.

4,201,157

PORTABLE ANIMAL HANDLING UNIT

Joe Lambert, Smith Center, Kans. 66967

Filed May 25, 1978, Ser. No. 909,544

Int. Cl.[2] A01K *29/00*

U.S. Cl. 119—82 **8 Claims**

1. A self contained, mobile animal handling apparatus, comprising:

(a) frame means including a bed arranged for an animal walkway,

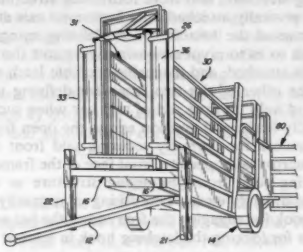
(b) a wheeled under-carriage mounted having wheels mounted on pivoted lateral axes to lower at least one set of wheels to raise said frame into a travel position and raise the at least one set of wheels to lower said frame into contact with the supporting surface in a general horizontal position,

(c) hydraulic means for raising and lowering said undercarriage including a hydraulic fluid reservoir and and a hand pump providing motivating power for said hydraulic means,

(d) draft means depending outwardly from one end of said frame for towing,

(e) elevating means adjustable secured at a final angle to the draft end of said frame for sloping said frame downwardly from the draft end forming as animal ramp,

(f) upwardly depending side means mounted perpendicularly on each side of said bed forming an animal walkway,



(g) one said side means being pivotally mounted to said bed for tilting inwardly forming an animal holding means including means for tilting said side means,

(h) each said side means including at least one gate means arranged for opening and closing providing access to a held animal,

(i) gate means at each end of said bed, and

(j) closure means at the draft end of each side means arranged for filling the gap at each end of each perpendicular side when said frame is sloped downwardly from the draft end.

4,201,158

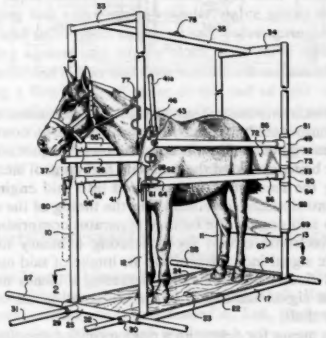
LIVESTOCK RESTRAINING CHUTE

Floyd J. Parker, 86 E. 1700 South, Farmington, Utah 84025

Filed Jan. 3, 1978, Ser. No. 866,241

Int. Cl.[2] A61D *3/00*

U.S. Cl. 119—98 **9 Claims**



1. A livestock restraining chute, comprising four uprights defining respective corners of a substantially parallelepiped framework of size sufficient to enclose an animal to be restrained and having substantially rectangular top and bottom faces and substantially rectangular and open side and front and

rear faces; respective restraining structures attached to and normally extending between corresponding uprights at respective opposite side faces of said framework for closing said side faces and restraining lateral movement of said animal; restraining gate structure attached to and normally extending between but openable and closeable with respect to the two corresponding uprights that define the rear end face of said framework to provide entry into and exit from the chute for the animal and to restrain rearward movement of said animal within the chute; front restraining structure normally extending and releasably secured between the two corresponding uprights that define the front end face of said framework to restrain forward movement of the animal and, when released, to drop freely downwardly so as to open said opposite end face of the framework and free an animal hung up on said front restraining structure, said front restraining structure comprising a bar pivotally attached on a horizontal axis at one of its ends to one of the two front-face-defining uprights of the framework so as to pivot downwardly against the upright to which it is attached; and manually operable latch means carried by the other of the two front-face-defining uprights to receive and hold the free end of said bar when such bar is in substantially horizontal position across the open front face of said framework for normally securing said front restraining structure across said opposite, front face of the framework and for releasing such front restraining structure as and when desired, said latch means comprising a manually operated latching hook for engaging the free end of the bar as a keeper, and means for locking the latching hook in latched position.

4,201,159

ELECTRONIC CONTROL METHOD AND APPARATUS FOR COMBUSTION ENGINES

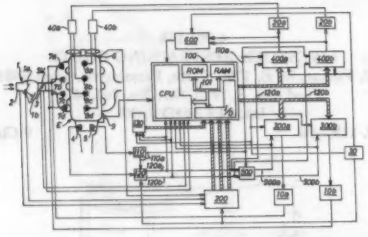
Hisasi Kawai, Toyohashi, and Toshikazu Ina, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 9, 1978, Ser. No. 885,076

Claims priority, application Japan, Mar. 23, 1977, 52-32733; Aug. 3, 1977, 52-93492

Int. Cl.[2] F02B *3/00*

U.S. Cl. 123—32 EB **9 Claims**



1. In an electronic control apparatus for a combustion engine having an output shaft driven by mechanical energy converted from heat energy caused by the combustion of air-fuel mixture, said engine being provided thereon with fuel control means for controlling the amount of fuel metered into said engine and ignition control means for controlling the timing of the sparks supplied to said engine, the control apparatus comprising:

a first electronic circuit for generating a binary number electric signal indicative of the air intake of said engine;

a second electronic circuit for generating a binary number electric signal indicative of the rotation speed of said output shaft;

detecting means for detecting a predetermined angular position of said output shaft to generate a first reset signal therefrom per one rotation of said output shaft;

means for generating a second reset signal with a predetermined phase lag in relation to the first reset signal from said detecting means;

a digital computer for repetitively determining first and second values corresponding to respective settings of said fuel and ignition control means in accordance with the binary number electric signals from said first and second electronic circuits upon sequentially receiving the first and second reset signals, said computer determining the first and second values respectively from a first function describing a desired relationship among the setting of said fuel control means, the air intake of said engine and the rotation speed of said output shaft and from a second function describing another desired relationship among the setting of said ignition control means, the air intake of said engine and the rotation speed of said output shaft;

a third electronic circuit coupled between said digital computer and said fuel control means for converting the first calculatec value into the setting of said fuel control means in response to the second reset signal; and

a fourth electronic circuit coupled between said digital computer and said ignition control means for converting the second calculated value into the setting of said ignition control means in response to the first reset signal;

the improvement wherein an electronic control circuit is coupled between said fourth electronic circuit and said digital computer for generating an electric control signal with a predetermined period of time in response to the setting of said ignition control means, said control signal being applied to said computer to halt the determination of the first value during the predetermined period of time defined by the control signal even if said computer is conditioned to determine the first value in response to the second reset signal, the remaining determination of the first value being subsequently performed after lapse of the predetermined period of time.

4,201,160

FUEL INJECTION SYSTEMS

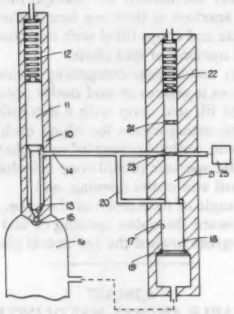
Ivor Fenne, Greenford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 12, 1978, Ser. No. 905,515

Claims priority, application United Kingdom, Jun. 9, 1977, 24207/77

Int. Cl.[2] F02B *3/00*

U.S. Cl. 123—32 G **9 Claims**



1. A fuel injection system for supplying fuel to a combustion space of a reciprocating piston internal combustion engine more particularly a diesel engine, the system comprising a fuel injection nozzle having a fuel inlet and including a valve member movable by fuel under pressure to an open position to allow fuel to flow into the combustion space and resilient means for moving said valve member to a closed position, the system further including a fuel pump for supplying fuel under pressure to said inlet of the nozzle in timed relationship with the associated engine, means whereby a small quantity of fuel can be supplied to the combustion space through the nozzle in

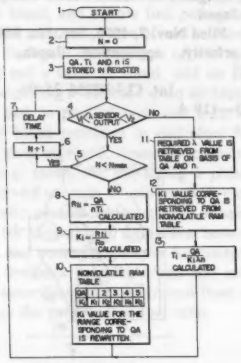
advance of the main quantity of fuel supplied by the pump, said means comprising a piston slidable within a cylinder, said cylinder having an inlet at one end for connection in use to the combustion space of the engine, an outlet from the other end of said cylinder connected to the inlet of the nozzle and valve means operable by said piston, said valve means being interposed between the fuel pump and the inlet of the nozzle and being arranged to be closed until said piston is at or adjacent said other end of the cylinder, the arrangement being such that the piston is moved to said other end of the cylinder during the compression of air within the combustion space, such movement acting to displace fuel from said other end of the cylinder to the injection nozzle and the combustion space to initiate combustion therein, the main quantity of fuel being supplied by the pump to the nozzle when said valve means has operated to place the pump in communication with the inlet of the nozzle.

4,201,161

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Takao Sasayama, Hitachi, and Seiji Suda, Mito, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 12, 1978, Ser. No. 950,572
Claims priority, application Japan, Oct. 17, 1977, 52-124262
Int. Cl.[2] F02D 5/00
U.S. Cl. 123—32 EB **10 Claims**



1. A control system for the internal combustion engine, comprising:

sucked air flow rate detector means for detecting an electrical signal related to the flow rate of the air sucked into the internal combustion engine,

number-of-revolutions detector means for detecting the number of revolutions of said engine,

air-fuel ratio detector means for detecting the air-fuel ratio of the mixture gas sucked into said engine as an electrical signal related to said air-fuel ratio,

fuel supply means for supplying fuel into the path of the air sucked into said engine, and

control means for supplying a control signal to said fuel supply means for controlling the quantity of fuel supplied by said fuel supply means, on the basis of an air flow rate signal produced from said sucked air flow rate detector means, a number-of-revolutions signal detected by said number-of-revolutions detector means and an air-fuel ratio signal detected by said air-fuel detector means;

said control means further comprising:

an air-fuel ratio correction factor control section including a first memory means for storing said air flow rate signal, said number-of-revolutions signal and the control signal supplied to said fuel supply means, in a repetition period longer than the delay time of transmission of the air-fuel ratio between said fuel supply means and said air-fuel ratio detector means, said air-fuel ratio correction factor control section judging that said air-fuel ratio signal is maintained within a predetermined level range for the period longer than said air-fuel ratio transmission delay time within said repetition period from the time of said storage in said first memory means, said control section calculating the air-fuel ratio, when the air-fuel ratio signal is maintained within said level range longer than said delay time, as a function of said control signal and the ratio between said air flow rate signal and said number-of-revolutions signal stored in said first memory means, said control section including a second means for storing an air-fuel ratio correction factor which is the ratio between said calculated air-fuel ratio and an initial air-fuel ratio stored already in said second memory means, and

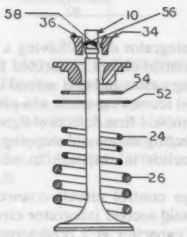
a special operation control section for reading out from said second memory means, when said engine is under a special operating condition, an air-fuel ratio stored therein suitable for said special operating condition, said special operation control section controlling the quantity of fuel from said fuel supply means on the basis of an air-fuel ratio obtained by correcting said read-out air-fuel ratio according to said air-fuel ratio correction factor.

4,201,162

ALUMINUM VALVE SPRING RETAINER

Frank H. Speckhart, 534 Dellwood Dr., Knoxville, Tenn. 37919

Filed May 12, 1978, Ser. No. 905,445
Int. Cl.[2] F01L 3/10
U.S. Cl. 123—90.67 **8 Claims**



1. An improved valve spring retainer for use in an internal combustion engine having a valve stem, an engine block, a valve spring retainer having a bore encircling a portion of said valve stem, keeper means mounted on said valve stem and engaging said valve spring retainer, valve spring means encircling said valve stem engaging said valve spring retainer and pressing against said engine block, said valve spring retainer characterized in that said bore is a smooth surface of revolution having a first angle of taper at the end of said valve spring retainer adjacent to said valve spring means and a second angle of taper at the end of said valve spring retainer opposite to said valve spring means said second angle of taper being at least about 10° larger than said first angle of taper.

4,201,163

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Tadashi Hattori; Minoru Nishida; Yoshiki Ueno, all of Okazaki; Kunio Makita, Chiryu, and Masaaki Kurii, Kasugai, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Jan. 3, 1977, Ser. No. 756,272
Claims priority, application Japan, Jan. 12, 1976, 51-2544
Int. Cl.[2] F02P 5/04
U.S. Cl. 123—117 R **4 Claims**

1. In an ignition system for an internal combustion engine, an ignition timing control device for electronically controlling

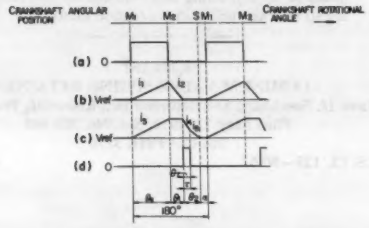
the timing of ignition of an internal combustion engine, comprising:

(a) angular position detecting means for detecting first and second different angular positions of a crankshaft of said engine to produce first and second detection signals corresponding to said first and second angular positions;

(b) a first integrator circuit having a first capacitor;

(c) a first charge/discharge control circuit connected to said angular position detecting means for charging said first capacitor at a predetermined current in response to said first detection signal from said angular position detecting means and discharging said first capacitor at a predetermined discharge current in response to said second detection signal;

(d) a timing circuit connected to said first integrator circuit for producing a timing signal of a predetermined time width when the potential across said first capacitor of said first integrator circuit is decreased to a predetermined value by said discharging, said timing circuit including a monostable circuit which produces said timing signal;



(e) a second integrator circuit having a second capacitor;

(f) a charge control circuit connected to said angular position detecting means and said second integrator circuit for charging said second capacitor at a predetermined current in response to said first detection signal from said angular position detecting means and stopping the charging of said second capacitor in response to said second detection signal;

(g) a discharge control circuit connected to said timing circuit and said second integrator circuit for discharging said second capacitor at a predetermined discharge current in response to said timing signal from said timing circuit and discharging said second capacitor at another current smaller than said discharge current in response to the termination of said timing signal; and

(h) an ignition signal generating circuit connected to said second integrator circuit for producing an engine ignition timing signal in accordance with the output of said second integrator circuit.

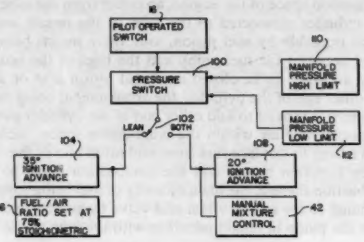
4,201,164

ENGINE ECONOMIZER CONTROL UNIT

Anthony A. duPont, 21515 Hawthorne Blvd., Torrance, Calif. 90503

Filed Oct. 17, 1977, Ser. No. 842,415
Int. Cl.² F02D *39/00*
U.S. Cl. 123—117 R **4 Claims**

1. A control unit for use in conjunction with a piston engine for providing for reduced fuel consumption during operation of the engine, said control unit including: first ignition control means for providing an ignition timing in the engine of substantially 20° before top dead center; a first manually-controllable mixture control means for providing a relatively rich fuel-to-air ratio in the engine which is manually controllable over a predetermined range; second ignition control means for providing an ignition timing in the engine of substantially 35° before top dead center; second mixture control means for providing a relatively lean fuel-to-air ratio of substantially 75° of stoichiometric in the engine; and switching means for connecting the first ignition control means and the first mixture control means to the engine for one operating position thereof and for connecting the second ignition control means and the second mixture control means to the engine for a second operating position thereof.

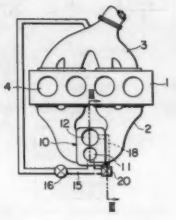


4,201,165

INTERNAL COMBUSTION ENGINE WITH DUAL INDUCTION SYSTEM AND WITH EGR SYSTEM

Toshiaki Tanaka, Fujisawa, and Yukihiro Etoh, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 7, 1978, Ser. No. 958,500
Claims priority, application Japan, Feb. 24, 1978, 53/23194[U]
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A **2 Claims**



1. An internal combustion engine comprising:

a cylinder block having a cylinder formed therein;

a piston reciprocably mounted within said cylinder;

a cylinder head positioned on one end of said cylinder;

a primary induction system adapted to direct a first fluid charge into said cylinder to swirl therein under all of the operating conditions of the engine;

a secondary induction system adapted to direct a second fluid charge into said cylinder in such a direction as to impede the swirling of first fluid charge under a predetermined operating condition of the engine;

an exhaust system adapted to discharge exhaust gas from said cylinder;

an exhaust gas recirculation conduit leading from said exhaust system to said primary induction system;

an exhaust gas recirculation control valve adapted to control exhaust gas passing through said exhaust gas recirculation conduit;

a branch conduit leading from said exhaust gas recirculation conduit at a location downstream of said exhaust gas recirculation control valve to said secondary induction system; and

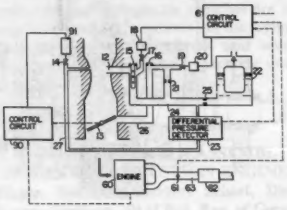
a second valve closing said branch conduit, said second valve being operative to open said branch conduit in response to load of the engine.

4,201,166

AIR TO FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yutaka Nishimura, and Yoshishige Oyama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 19, 1978, Ser. No. 952,737
Claims priority, application Japan, Oct. 20, 1977, 52-126438
Int. Cl.[2] F02M 7/12
U.S. Cl. 123—119 EC 38 Claims



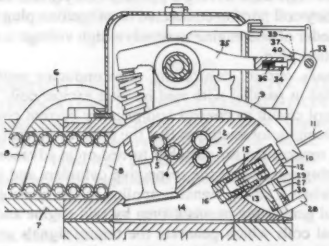
1. An air to fuel ratio control system for an internal combustion engine having a fixed venturi type carburetor, including a main fuel path connecting a nozzle opened to a venturi of a suction tube to a bottom of a float chamber and having a main jet and a main air bleed, and a slow fuel path connecting an opening formed near a throttle valve of said suction tube to an area of said main fuel path downstream of said main jet and having a slow jet and a slow air bleed; said air to fuel ratio control system comprising a feedback main air bleed provided in said main fuel path in parallel with said main air bleed, a feedback slow air bleed provided in said slow fuel path in parallel with said slow air bleed, means for establishing an air to fuel ratio setting, means for extracting a pressure corresponding to a relieved vacuum at said venturi, means for extracting a fuel static pressure downstream of said main jet, detecting means for detecting a difference between the extracted pressures, and controlling means for controlling opening areas of said feedback main air bleed and said feedback slow air bleed in accordance with an output from said detecting means to attain the preset air to fuel ratio.

4,201,167

METHANOL VAPORIZATION AND INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Richard I. Bayley, 1076 Wunderlich Dr., San Jose, Calif. 95129

Filed May 5, 1978, Ser. No. 903,076
Int. Cl.[2] F02M 31/00
U.S. Cl. 123—122 E 4 Claims



1. A four stroke alcohol fueled internal combustion engine comprising:

an engine block and cylinder head means forming two or more combustion chambers, said cylinder head means being air-cooled and having interior bottom portions capable of operating at a temperature of approximately 400° F.;

movable compression and expansion members disposed within said chambers, said expansion members being operative to compress working fluid within said chambers and being movable by expansion of fluid within said chambers to mechanically couple energy to an external drive means;

intake valve means for admitting fresh air into each said chamber;

exhaust valve means for exiting exhaust gases from each said chamber;

valve actuating means for actuating said intake valve means and said exhaust valve means;

thermally insulated exhaust manifold means through which said exhaust gases flow;

means for vaporizing liquid alcohol input at a high pressure to a vapor pressure of approximately 800 psi and a temperature of approximately 600° F. and including means forming a heat exchanging tubular passageway within said cylinder head means and which originates in the hottest interior portion thereof and then extends into said exhaust manifold where it follows a generally helical path along the inside of the wall thereof;

alcohol vapor injector means for injecting metered amounts of high pressure, high temperature alcohol vapor into each said combustion chamber near the peak of the chambers compression stroke and including injector actuating means energized by said valve actuating means for opening and closing said vapor injector means; and

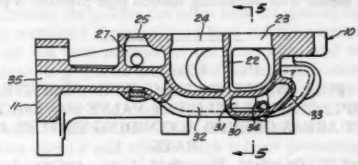
means forming a thermally insulated high pressure passageway connecting the downstream end of said tubular passageway to said injector means.

4,201,168

INTAKE MANIFOLD FOR ENGINE

Yasumichi Ohama, Mitaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1978, Ser. No. 924,626
Claims priority, application Japan, Jul. 18, 1977, 52-84982
Int. Cl.[2] F02M 31/00
U.S. Cl. 123—122 AB 4 Claims



1. For use with an internal combustion engine having a plurality of main combustion chambers and a plurality of auxiliary combustion chambers, an intake manifold comprising, in combination: a main primary opening communicating with a main distribution cavity for a relatively lean air-fuel mixture, a main secondary opening communicating with the same cavity, an auxiliary opening communicating with an auxiliary distribution cavity for a relatively rich air-fuel mixture, passages in the intake manifold establishing communication from said main distribution cavity to the engine, additional passages in the intake manifold establishing communication from the auxiliary distribution cavity to the engine, said main distribution cavity being divided by wall means to form a first sub-cavity and a second sub-cavity, said first and second sub-cavities communicating with the main primary opening and the main secondary opening respectively, a hot water jacket positioned below the main and auxiliary distribution cavities having a water passage spaced apart from the area below the second sub-cavity, in order to avoid direct contact and rapid transfer of heat between said second-subcavity and said water passage, both bottom walls of the auxiliary distribution cavity and the first

sub-cavity being in direct contact with said water passage for rapid transfer of heat into the auxiliary distribution cavity and the first sub-cavity, means for introducing hot water into heating chamber, and an outlet from said heating chamber.

4,201,169

CONTROL INSTALLATION FOR THE IDLING ROTATIONAL SPEED OF INTERNAL COMBUSTION ENGINES

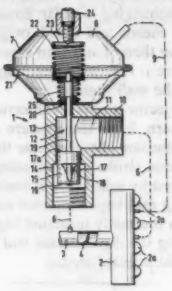
Athanasios Michassouridis, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 6, 1977, Ser. No. 857,892

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1976, 2655171

Int. Cl.² F02M *69/00*

U.S. Cl. 123—124 R **9 Claims**



1. A control installation for the idling rotational speed of internal combustion engines, comprising a by-pass control valve means disposed in parallel to a selectively actuatable throttle valve means and controlled by an adjusting means dependent on the suction pipe pressure, the opening cross section of the by-pass control valve means increasing with increasing suction pipe pressure, characterized in that the rate of increase of the opening cross section of the by-pass control valve means with increasing suction pipe pressure is progressive.

4,201,170

FUEL INJECTION PUMP WITH POSITIVE DISPLACEMENT DELIVERY VALVE HAVING TWO PORT AREAS OPENED ACCORDING TO FUEL FLOW RATE

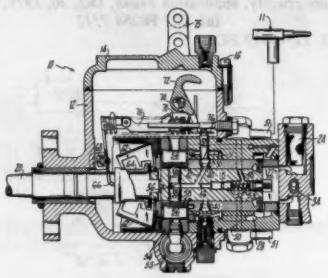
Norbert W. Overfield, Bloomfield, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Jul. 31, 1978, Ser. No. 929,820

Int. Cl.² F02M *41/08*; F04B *39/10*

U.S. Cl. 123—139 BD **6 Claims**

1. A liquid fuel injection pump for a multicylinder internal combustion engine having a fuel injection nozzle for each cylinder for injecting a fuel charge into the cylinder when supplied with fuel under pressure above a predetermined level, a charge pump operable to generate periodic pulsed charges of pressurized fuel, a fuel distributor between the charge pump and the injection nozzles providing a delivery passage for sequentially delivering the pulsed charges of fuel to the several nozzles, a reciprocable delivery valve disposed in said delivery passage and providing a passageway for conducting fuel past the delivery valve, said delivery passage providing a stop for fixing the closed position of the delivery valve, and a spring biasing the delivery valve toward the stop against the pressure generated by the charge pump, characterized in that the delivery valve is a positive displacement delivery valve which closes said passage to prevent the flow of fuel in either direction when the delivery valve is engaged with the stop, said passageway having port means providing a restricted passage to accommodate only a low fuel flow rate when the delivery valve is displaced from the stop by a first distance, said port means providing a larger fuel flow area when the delivery valve is displaced from the stop its maximum distance to accommodate the unrestricted flow of fuel at high fuel flow rates



whereby the delivery valve retracts after the delivery of each pulsed charge of fuel to a nozzle to reduce the residual pressure downstream of the delivery valve below the predetermined level at all fuel flow rates and to a lower level at high fuel flow rates than at low fuel flow rates.

4,201,171

IGNITION SYSTEM FOR A MULTICYLINDER ENGINE

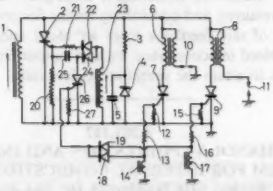
Hirotoshi Nanjo, and Kimihiro Boyama, both of Susono, Japan, assignors to Kokusan Denki Co., Ltd., Numazu, Japan

Filed May 3, 1978, Ser. No. 902,292

Claims priority, application Japan, May 4, 1977, 52-51494

Int. Cl.² F02P *1/08*

U.S. Cl. 123—148 AC **8 Claims**



1. An ignition system for a multicylinder engine comprising a magneto having an igniting exciter coil to induce an AC voltage in synchronism with rotation of the engine;

ignition coils each having a primary coil portion and a secondary coil portion connected to an ignition plug for each cylinder of said engine to supply a high voltage across said ignition plug;

a primary current controlling semiconductor switch connected in parallel with said igniting exciter coil;

a control circuit to control said primary current controlling semiconductor switch so that the primary current controlling semiconductor switch is turned on in advance of each igniting position of the respective cylinders and is turned off when a timing signal is applied to the control circuit;

a signal generating means driven by said engine and having signal coils which generate the timing signals at said respective igniting positions of the cylinders;

primary current conducting semiconductor switches corresponding to said ignition coils and connected in series with the respective primary coil portions of the ignition coils, the respective series connections of the primary coil portions and the primary current conducting semiconductor

switches being connected in parallel with said igniting exciter coil;

said signal coils being coupled to the respective primary current conducting semiconductor switches so that the respective primary current conducting semiconductor switches are turned on by the respective timing signals;

and said signal coils being further coupled to said control circuit to supply the timing signals thereto;

whereby said primary current controlling semiconductor switch is turned off at the same time as said primary current conducting semiconductor switches are turned on at the respective igniting positions of the cylinders and a high voltage is established across said secondary coil portions of said ignition coils to spark the corresponding ignition plugs.

4,201,172

FUEL INJECTION NOZZLE ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

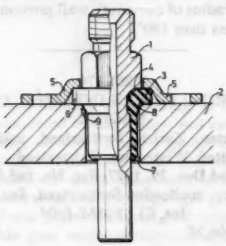
Günther Jäggle, Stuttgart; Herbert Scharl, Ditzinger, and Rudolf Krauss, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 546,671, Feb. 3, 1975, abandoned, which is a continuation of Ser. No. 365,631, May 31, 1973, abandoned. This application Jun. 9, 1976, Ser. No. 694,288

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1972, 2233919

Int. Cl.² F02M *61/14*

U.S. Cl. 123—139 AW **7 Claims**



1. A fuel injection nozzle assembly for use in an externally ignited internal combustion engine, comprising:

(a) a fuel injection nozzle having an elongated body portion in the outer surface of which there is formed a recess;

(b) a flanged sleeve having a surface defining a bore into which the nozzle body is received, said surface including a protrusion which is received within said recess in a form-fitting manner for retaining the nozzle in engagement with the sleeve; and

(c) fastening means engageable with the flange of said sleeve for mounting the sleeve and nozzle to the engine.

4,201,173

IGNITION APPARATUS FOR MULTI-CYLINDER RECIPROCATING INTERNAL COMBUSTION ENGINE

Tomoyuki Okada, Tsuchiura, and Noboru Sugiura, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 21, 1978, Ser. No. 898,683

Claims priority, application Japan, Apr. 22, 1977, 52/45783; Jun. 8, 1977, 52/66637

Int. Cl.² F02P *15/02*

U.S. Cl. 123—148 C **11 Claims**

1. An ignition apparatus for a multicylinder reciprocating internal combustion engine comprising;

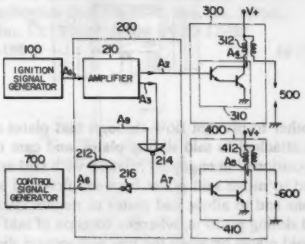
a plurality of spark plugs arranged in each cylinder;

a plurality of high voltage generating circuits each connected to corresponding one of said plurality of spark plugs;

an ignition signal generating circuit for generating an ignition signal indicative of ignition timing in accordance with the rotation of the engine;

means responsive to a predetermined condition for generating a disabling signal to disable the sparking operation of selected at least one of said plurality of spark plugs; and

actuation signal generating means connected to said ignition signal generating circuit and said disabling signal generating means, for applying actuation signals in response to said ignition signal to said respective plurality of high voltage generating circuits to cause said high voltage generating circuits to generate high voltages thereby producing sparks at said corresponding spark plugs, said actuation signal generating means being operative in respect to said disabling signal in a manner so that said actuation signal generating means applies the actuations signals, in response to the ignition signal, to selected at least one of said high voltage generating circuits connected to said corresponding selected at least one of said plugs spark in the absence of said disabling signal and to



said high voltage generating circuits other than said selected high voltage generating circuits irrespective of said disabling signal, said actuation signal generating means being operative in response to the generation of said disabling signal with respect to the application of the actuation signal to said selected high voltage generating circuit in a manner so that said actuation signal generating means allow said selected high voltage generating circuit to continue the igniting operation until the igniting operation is completed if said selected high voltage generating circuit has been actuated at the time when said disabling signal is generated and inhibits further application of the actuation signal to said selected high voltage generating circuit after the completion of said igniting operation while it inhibits the subsequent application of the actuation signal if said selected high voltage generating circuit is not being actuated at the time when said disabling signal is generated, said inhibition of the application of the actuation signal being continued so long as said disabling signal continues.

4,201,174

ROTARY VALVE SYSTEM FOR MOTORS AND THE LIKE HAVING IMPROVED SEALING MEANS

Tony E. Vallejos, Paramount, Calif., assignor to Alto Automotive, Inc., Deerfield, Ill.

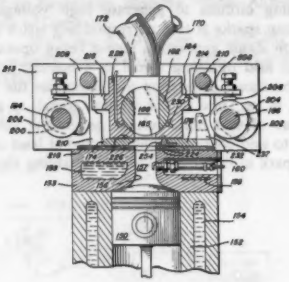
Continuation-in-part of Ser. No. 801,634, May 31, 1977, Pat. No. 4,119,077, which is a continuation-in-part of Ser. No. 653,195, Jan. 28, 1976, Pat. No. 4,098,238. This application Jan. 19, 1978, Ser. No. 870,921

Int. Cl.² F01L *3/00, 1/28*

U.S. Cl. 123—188 B **19 Claims**

1. In a motor having a combustion chamber, fuel inlet and outlet means communicating with said combustion chamber through a single, common port coaxially located with said combustion chamber, a shaft, and rotary valve means operated in registry with said shaft, controlling flow through said inlet and outlet means and port, the improvement comprising, in

combination: sliding valve means, positioned to control flow through the port between said rotary valve means and combustion chamber, comprising first and second sliding plates positioned together in facing, overlaping relationship and free of spring-biased pressure together, said first and second sliding plates each defining an aperture, said plates being movable between a first sliding position in which said apertures overlap to define a flow path through said plates and said port, and a second sliding position in which said apertures are spaced from



each other to prevent flow through said plates and port; arm means attached to said sliding plates, and cam means on said shaft positioned in engaging relation with said arm means, and adapted to move said plates between first and second sliding positions and to allow said plates to remain stationary in said second sliding position, whereby rotation of said shaft reciprocates said plates between the first and second sliding positions in a manner correlating with the opening and closing of said rotary valve.

4,201,175

CYLINDER HEAD CONSTRUCTION

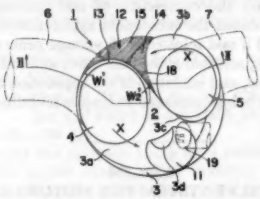
Kazuyuki Tanaka, Hiroshima; Kazuo Kobayashi, Aki; Itsuro Okabe, Hiroshima, and Toshimitsu Tanaka, Kuga, all of Japan, assignors to Toyo Kogyo Co., Ltd., Aki, Japan

Continuation of Ser. No. 795,186, May 9, 1977, abandoned. This application Sep. 6, 1978, Ser. No. 940,134

Claims priority, application Japan, May 14, 1976, 51/55921

Int. Cl.[2] F02B *23/08*

U.S. Cl. 123—191 M **4 Claims**



1. A cylinder head construction which includes:

a mating surface for connection to a cylinder block;

an inner surface defining a multi-hemispheric combustion chamber and having large-radius of curvature wall portion which is provided with an intake port through which an air-fuel mixture enters said combustion chamber and a small-radius of curvature wall portion which is provided with an exhaust port through which exhaust gases produced by combustion of said mixture leave said combustion chamber;

ignition means in said cylinder head for igniting said mixture in said combustion chamber;

valve means actuatable to selectively open and close said intake port and exhaust port, said intake port and exhaust port having valve seats therein on which said valve means are seated; and

guide wall means extending from said inner surface of said cylinder head towards said mating surface and having a first wall surface which faces said intake port and is generally parallel to the periphery of said intake port (and), a second wall surface which faces said exhaust port and curving outwardly from said exhaust port and which is generally smoothly connected with said small-radius of curvature wall portion of said inner surface and extending toward said mating surface in a downward slope to form a junction with a portion of said first wall surface, and a third wall surface which is at the level of said mating surface, said first wall surface of said guide wall means having an inner end closer to the center of the cylinder head than the remainder of said guide wall means and having an outer end adjacent the periphery of the cylinder head adjacent said intake port, said (first wall surface and said second wall surface joining in a) junction (which is) being a smooth continuation of the line of junction of said large-radius and small-radius of curvature wall portions, the ratio of the distance between the inner end of said guide wall means and the center of said cylinder head to the radius of said cylinder head being in the range of 0.1 to 0.7 and the angle defined between a diametrical line extending from the outer end of said guide wall means through the center of said cylinder head and a line extending from said center of the cylinder head to the center of said ignition means, said angle being measured through said large radius of curvature wall portion, is from 180° to an angle lers than 180°.

4,201,176

RADIAL BEARING FOR AN INTERNAL COMBUSTION ENGINE

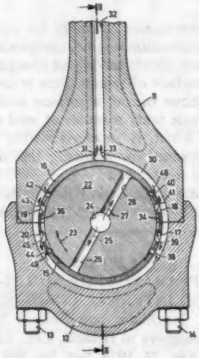
George Lustgarten, Zurich, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 29, 1977, Ser. No. 865,515

Claims priority, application Switzerland, Jan. 4, 1977, 45/77

Int. Cl.[2] F01M *1/04*

U.S. Cl. 123—196 M **9 Claims**



1. In combination,

a radial bearing having a groove in an inner surface thereof and at least one orifice communicating said groove with a lubricant chamber outside said bearing;

a shaft rotatably mounted in said radial bearing, said shaft having an axial duct for communication with a lubricant supply and at least one radial duct extending from said axial duct to a surface of said shaft within said radial bearing and circumferentially aligned with said groove in said bearing whereby said axial duct, said radial duct, said

groove and said lubricant chamber define a lubricant flow path; and

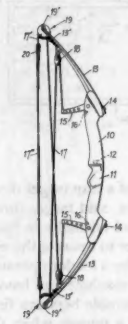
a feed way communicating said lubricant flow path with a terminal region of said groove which a point on said shaft initially passes over relative to the direction of rotation of said shaft, said feed way being of a cross-sectional area smaller than the cross-sectional area of said orifice.

4,201,177

COMPOUND BOW

Rudolph G. Holman, Leguna Beach, and Frank W. Ketchum, Manton, both of Calif., assignors to AMF Incorporated, White Plains, N.Y.

Filed Dec. 7, 1977, Ser. No. 858,138
Int. Cl.[2] F41B *5/00*
U.S. Cl. 124—23 R **6 Claims**



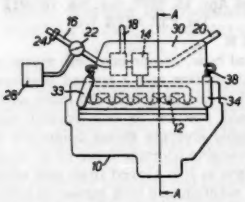
5. In a compound archery bow having an eccentric cable pulley, a cable connected to said pulley, and means for changing the eccentricity of said pulley, a socket formed on said pulley, a ball formed on said cable, said ball being removably nested in said socket for quick disconnect of said cable from said pulley, and said means comprising a slot in said pulley, the eccentric axis of said pulley being aligned with said slot, and manually operable gear means contiguous and connected to said pulley for quick shift of said pulley with respect to said axis.

4,201,178

ENGINE FLAMEPROOFING

Philip G. Tyrer, Brighton, and John Pluck, Henfield, both of England, assignors to Pyroban Limited, Horsham, England

Filed Apr. 4, 1977, Ser. No. 784,639
Claims priority, application United Kingdom, Jun. 3, 1976, 22986/76; Apr. 5, 1976, 13777/76
Int. Cl.[2] F02B *77/08*; A62C *35/02*
U.S. Cl. 123—198 D **19 Claims**



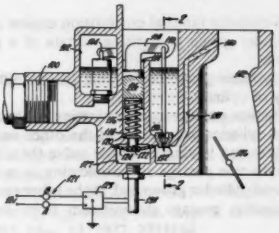
1. An internal combustion engine assembly comprising an engine having an engine air inlet and having a hot external surface exposed to a normally combustion-supporting environment, a sensor for detecting the presence of flammable gases externally of the engine in the vicinity of the assembly, a canopy shrouding said hot surface of the engine, and a source of non-flammable fluid operable responsive to signals from the sensor from detection of the presence of flammable gases externally of the engine in the vicinity of said assembly to inject a sufficient quantity of said non-flammable fluid into the space between the canopy and the said external surface for preventing said flammable gases from burning due to contact with said external surface, by both cooling said surface and by substantially diminishing the combustion-supporting character of said normally combustion-supporting environment.

4,201,179

SPLIT ENGINE VACUUM CONTROL FUEL METERING SYSTEM

Arthur Garabedian, Fullerton, Calif., assignor to Dudley B. Frank, Santa Ana, Calif.

Division of Ser. No. 629,178, Nov. 5, 1975, Pat. No. 4,076,033.
This application Jan. 16, 1978, Ser. No. 869,413
Int. Cl.[2] F02M *13/04*; F02D *17/00*
U.S. Cl. 123—198 F **14 Claims**



1. A split engine carburetor for independently controlling the flow of fuel to respective halves of the number of an engine's cylinders, said carburetor comprising:

a first fuel path located in said carburetor;

a second fuel path located in said carburetor, said first fuel path in fluid communication with one-half of said cylinders, said second fuel path in fluid communication with the other half of said cylinders;

valving means for controlling the flow of fuel through said second fuel path to said other half of said cylinders, said valving means in fluid communication with an intake manifold of said one-half of said cylinders, wherein said valving means comprising:

a metering block; and

a power valve mounted in said metering block, said power valve and said metering block modified to have two separate fuel flow lines, with one fuel flow line going through said metering block and the other fuel flow line going through said power valve, said other fuel flow line having an inlet fuel channel within said power valve, said inlet channel being movable with said power valve, said power valve allowing flow of fuel only to said other half of said cylinders when said power valve is opened by said biasing means;

means connected to said valving means for biasing said valving means toward an open position; and

means connected to said valving means and responsive to a specified vacuum in said intake manifold for moving said valving means toward a closed position, said engine operating on only said one-half of said cylinders when said vacuum in said manifold is above said specified level by closing said valving means and preventing said fuel flow to said other half of said cylinders.

4,201,180

SPLIT ENGINE OPERATION OF CLOSED LOOP CONTROLLED MULTI-CYLINDER INTERNAL COMBUSTION ENGINE WITH AIR-ADMISSION VALVE

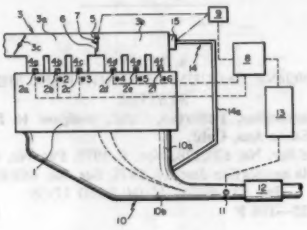
Haruhiko Iizuka, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 2, 1978, Ser. No. 947,638

Claims priority, application Japan, Nov. 29, 1977, 52/159832[U]

Int. Cl.[2] F02D *17/00*

U.S. Cl. 123—198 F **6 Claims**



1. A multi-cylinder internal combustion engine comprising:

a first cylinder group comprising certain of a plurality of cylinders;

a second cylinder group comprising the remainder of said plurality of cylinders;

a first induction passage communicating, at one end, with said first cylinder group and, at the other end, with the atmosphere and having a throttle valve therein;

a second induction passage communicating, at one end, with said second cylinder group and, at the other end, with said first induction passage downstream from said throttle valve;

a first exhaust passage communicating, at one end, with said first cylinder group and, at the other end, with the atmosphere;

a second exhaust passage communicating, at one end, with said second cylinder group and, at the other end, with said first exhaust passage;

an oxygen sensor disposed in said first exhaust passage, said sensor including means for generating an output signal representative of the oxygen content in the exhaust gases;

a three-way catalytic converter disposed in said first exhaust passage downstream from the portion of said second exhaust passage communicating with said first exhaust passage;

a first fuel injector disposed in said first induction passage for feeding fuel to said first cylinder group;

a second fuel injector disposed in said second induction passage for feeding fuel to said second cylinder group;

an air admission valve disposed at the portion of said second induction passage communicating with said first induction passage, said valve selectively establishing and blocking the communication between said first and second induction passages;

an exhaust gas recircularion (EGR) device having an EGR passage leading from said second exhaust passage to said second induction passage and including an EGR valve disposed in said EGR passage;

means for controlling said first and second injectors in response to the output signal of said oxygen sensor such that both of said first and second injectors operate when the engine is operated under a heavy load condition, and only said first injector operates when the engine is operating under a light load condition;

means for controlling said air admission valve in response to engine operation, such that said air admission valve controlling means opens said valve when the engine is operating under a heavy load condition and closes said valve when the engine is operating under a light load condition; and

means for controlling said EGR device, wherein said EGR device controlling means opens said EGR valve and recirculates exhaust gas from said second exhaust passage to said second induction passage when the engine is operating under a light load condition.

4,201,181

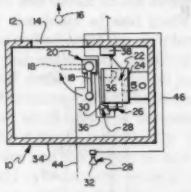
TRAP LOADER SAFETY ASSEMBLY

Ormonde C. Becker, 404 E. Lake Dr., Sarasota, Fla. 33582

Filed Aug. 9, 1978, Ser. No. 932,275

Int. Cl.[2] F41B *7/00*

U.S. Cl. 124—6 **7 Claims**



1. The combination of a trap target throwing maching and a safety assembly therefor, said target throwing machine being electrically operated and normally in operating circuit with a source of electric power to operate the machine, said machine being manually loaded by a loader operator positioned in a safe position proximate the machine and having means to throw a target; signal means operable between first and second conditions for indicating to a person when the loader is, respectively, in and out of said safe position; circuit control means operable between a first condition for placing said machine in an operating mode in said operating circuit and placing said signal means in said first condition indicating to the shooter and loader that the loader is in said safe position, and a second condition taking said machine out of said operating circuit and placing said signal means in said second condition indicating to a remote shooter and the loader that the loader is out of said safe position; and operating means operable to a first condition and responsive to the body or gravity weight of the loader indicating that the loader is in said safe position for operating said control means to said first condition and operable to a second condition and operable in response to the removal of the body weight of the loader indicating to a remote shooter and the loader that the loader is out of said safe position to operate said control means to said second condition.

4,201,182

COMPOUND BOW

Dennis L. Butler, Wilmington, Ill., assignor to Bass Research and Design, Inc., Joliet, Ill.

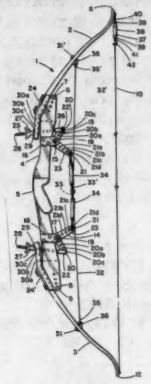
Filed Apr. 15, 1977, Ser. No. 787,912

Int. Cl.[2] A41B *5/00*

U.S. Cl. 124—24 R **23 Claims**

1. A compound bow, comprising limb means movable between a released position and a cocked position, bowstring means connected to said limb means to move said limb means from said released position to said cocked position when drawn, and variable leverage means connected to said limb means to apply variable leverage force on at least two points on said limb means as it is moved from said released to said cocked position, wherein said limb means includes a centrally disposed elongated frame member having a hand grasp section thereon, first and second limb members, said first limb member being mounted on said elongated frame member at one side of said hand grasp section thereof, said second limb member being mounted on said elongated frame member at the opposite side of said hand grasp section, wherein said variable leverage

means includes first and second pivot members each having a pivotal axis, said pivot members each including a first anchor point spaced radially from said pivotal axis along a first radius, a second anchor point spaced radially from said pivotal axis along a second radius angularly displaced from said first radius, said first limb member being directly connected to said first anchor point of said first pivot member, first direct connecting means extending in a substantially straight line between the point of connection to said first limb member and said first anchor point of said first pivot member, said second limb member being directly connected to said second anchor point of said first pivot member, second direct connecting means extending in a substantially straight line between the point of connection to said second limb member and said second anchor point of said first pivot member, said second limb member



being directly connected to said first anchor point of said second pivot member, third direct connecting means extending in a substantially straight line between the point of connection to said second limb member and said first anchor point of said second pivot member, said first limb member being directly connected to said second anchor point of said second pivot member, and fourth direct connecting means extending in a substantially straight line between the point of connection to said first limb member and said second anchor point of said second pivot member, wherein when viewed from one side said first anchor point of said first pivot member is at approximately the one o'clock position in relation to its pivotal axis when said bowstring means is in its released position and said first anchor point of said second pivot member is at approximately the five o'clock position in relation to its pivotal axis when said bowstring means is in its released position.

4,201,183

BOW HAVING A SELF HELD COCK POSITION

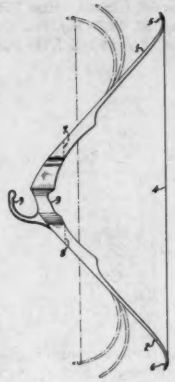
Lawrence E. Bodkin, 1833 Ryar Rd., Jacksonville, Fla. 32216

Filed May 8, 1978, Ser. No. 903,937

Int. Cl.[2] F41B 5/00

U.S. Cl. 124—24 R **25 Claims**

19. A bow having a rigid central handle portion joining two resiliently flexible limbs, each said limb when unstressed extending from said handle portion in a rearwardly inclined direction for a respective first length portion adjacent said handle portion and curving from such direction into a forwardly inclined resiliently bendable end portion terminating in a limb nock, a section of each limb between its end portion and said handle being resilient and recurved, a bowstring connected between said nocks of said limbs having a length equal to the distance between said limb nocks when drawn to a position in which a portion in each of said sections is substantially straightened whereby said bow is maintained in a self-holding cock position of high brace without the assistance of any external force, said limbs being selectively releasable by a separate force supplied by a user on said bowstring or bow to



trigger movement of said bowstring and limbs to a position of low brace.

4,201,184

GLASS CERAMIC STOVE AND SUBASSEMBLIES THEREFOR

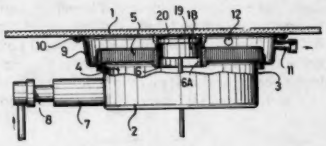
Herwig Scheidler, Mainz; Dietmar Wennemann, Alzey, and Bernd Schwank, Koeln-Marienbrueck, all of Fed. Rep. of Germany, assignors to Jenaer Glaswerk Schott & Gen., Fed. Rep. of Germany

Filed May 11, 1977, Ser. No. 795,940

Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621801; Mar. 19, 1977, 2712164

Int. Cl.[2] F24C 3/04

U.S. Cl. 126—39 J **27 Claims**

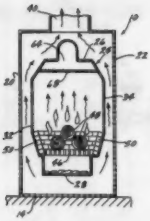


1. A cooking stove assembly having a glass-ceramic cooking plate in combination with at least one burner assembly, each such burner assembly having a housing and a perforated burner plate in combination therewith, said burner plate and said housing together defining a burner chamber, said burner plate being disposed generally across an upper portion of said housing, said burner plate being generally spatially located in spaced parallel relationship to the underside of said cooking plate, said housing and said burner plate being maintained in fixed relationship to said cooking plate by a peripherally extending generally upstanding ring member secured on its lower edge portions to said housing and/or to said burner plate, and secured on its upper edge portions to said underside by elastic sealing means, said burner plate, said cooking plate, said ring member, and said sealing means together defining a heating chamber, each such burner assembly further having located in said heating chamber (A) a temperature sensor for temperature limitation, serving to detect when said cooking plate is exposed to predetermined excessive temperatures, (B) an ignition means for igniting gas, (C) an ignition safety means for detecting if gas ignition does not occur after operation of said ignition means, and (D) an energy regulating sensor adapted to sense temperatures within preselected temperature ranges.

4,201,185
METHOD AND MEANS FOR HEATING BY WOOD BURNING

Milton W. Black, Box 64, Gibbon, Minn. 55335

Filed Aug. 21, 1978, Ser. No. 935,370
Int. Cl.[2] F24C *1/14;* F24B *5/00;* F23M *7/00*
U.S. Cl. 126—77 11 Claims



10. A wood burning furnace comprising:

a furnace housing having a firebox therein, said firebox having upper and lower ends,

a flue opening in said firebox adjacent said upper end thereof;

a flue extending through said housing and being in communication with the interior of said firebox through said flue opening;

a grate within said firebox and spaced downwardly from said upper end of said firebox for supporting burning fuel whereby the heated gases from said burning fuel will rise and exit from said firebox through said flue opening;

a main draft opening in said housing positioned to provide communication of air from the exterior of said housing to the interior of said firebox adjacent said grate;

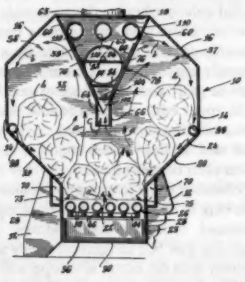
a heat saving baffle within said housing and positioned in spaced relation below said flue opening and spaced relation above said grate so as to deflect rising partially combusted gases and thereby delay their exit through said flue opening;

a secondary draft opening within said housing positioned in spaced relation above said grate and spaced relation below said baffle whereby the venturi effect of said rising gases will draw fresh air into said firebox through said secondary draft opening and will mix with and preheat said fresh air prior to the time said rising gases are delayed by said baffle.

4,201,186
SOLID-FUEL BURNER

Patrick J. Paquin, 765 Paradise Ave., Hamden, Conn. 06514

Filed Mar. 17, 1978, Ser. No. 887,749
Int. Cl.[2] F24C *15/28;* F24B *13/04*
U.S. Cl. 126—83 11 Claims



1. A wood burner comprising a casing forming a combustion chamber having a pair of planar bottom wall means for supporting a load of wood to be burned, said planar bottom wall means being inclined downwardly toward the center of said combustion chamber,

means located adjacent the lower edges of said planar bottom wall means for supplying air to said combustion chamber to form a primary fire zone substantially vertically above said air supply,

the slope of said planar bottom wall means being gradual enough to provide space within the combustion chamber for said wood outward of said fire zone, while being steep enough to ensure the wood stacked against said bottom walls gravitates into said primary fire zone as the wood in said zone is consumed by the fire, and

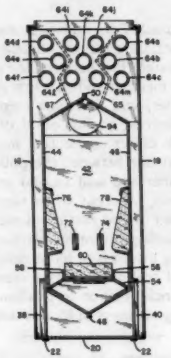
a substantially V-shaped partition disposed in the upper portion of said combustion chamber centrally thereof with the apex of said V-shaped partition extending downward into close proximity to said primary fire zone, such that unburned combustion products rising therefrom are deflected outwardly by said V-shaped partition into the upper portions of the combustion chamber on opposite sides of said partition and recirculated as they cool downwardly into said primary fire zone,

said partition having a restricted exhaust opening adjacent its apex for continuously exhausting combustion products from said combustion chamber.

4,201,187
MODULAR SOLID FUEL FURNACE SYSTEM

Lynn R. Skow, North Branch, Minn., assignor to Gemini Systems, Inc., North Branch, Minn.

Filed Sep. 8, 1978, Ser. No. 940,747
Int. Cl.[2] F24H *3/02*
U.S. Cl. 126—110 E 2 Claims



1. A solid fuel burning furnace to be used in combination with a fluid fuel furnace heating system, comprising:

(a) a cabinet;

(b) a firebox means located within said cabinet for holding solid fuel to be burned;

(c) a first enclosed chamber means formed in said cabinet connected to said firebox for channeling hot gas-laden air to the upper portion of said cabinet;

(d) first and second sets of tubular heat exchange members, the first set having one open end entering said enclosed chamber for receiving said hot gas laden air and transporting same to a location proximate the opposite end of said tubular heat exchange members;

(e) manifold means at said location for routing said hot gas laden air back through said second set of tubular heat exchange members;

(f) an outlet port means coupled to the end of said second set

of tubular heat exchange members for passing said gas laden air to a chimney; and

(g) a second chamber means within said cabinet which is isolated from said first chamber for routing fresh air from the base of said cabinet and over the exterior surfaces of said first and second sets of tubular heat exchange members;

(h) a temperature-sensing element means located in said cabinet for producing an electrical signal proportional to the temperature therein;

(i) means for comparing said electrical signal to a first threshold and for producing a control signal when said electrical signal exceeds said first threshold;

(j) means responsive to a call for heating in the space being heated for initiating a time interval of a predetermined length; and

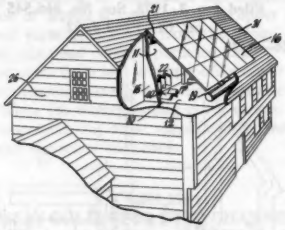
(k) means for turning on said fluid fuel furnace if said electrical signal fails to exceed said first threshold during said time interval.

4,201,188

SOLAR COLLECTOR AND HEAT TRAP

Richard D. Cummings, Reading, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 4, 1978, Ser. No. 902,857
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—429 **13 Claims**



1. A solar collector unit comprising:

a generally triangular housing member including a vertical back wall, a horizontal base, end walls and a sloped light transparent front surface for receiving solar radiation;

a corrugated heat trap member defining longitudinally extending tunnels and valleys suspended in front of at least part of said back vertical wall and adapted to receive solar radiation;

means for introducing cool air adjacent to horizontal base near said front surface; and

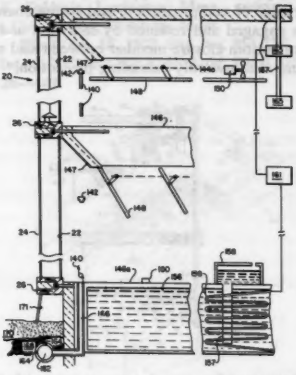
means for removing war air from adjacent the vertical back wall near the top thereof whereby at temperatures below about 150° F. air flows through said collector in the direction from said front surface to said vertical back wall and then upwardly through said tunnels and valleys of said heat trap member, and at temperatures above about 150° F. air which would normally flow within the valleys of the heat trap member rises in the collector and moves towards the front surface, thereby rejecting some excess heat to ambient atmosphere.

4,201,189

CURTAIN ASSEMBLY

Norman B. Saunders, 15 Ellis Rd., Weston, Mass. 02193

Continuation of Ser. No. 795,101, May 9, 1977, abandoned, which is a division of Ser. No. 607,568, Aug. 25, 1975, abandoned, which is a division of Ser. No. 529,235, Dec. 3, 1974, Pat. No. 3,952,947. This application Nov. 6, 1978, Ser. No. 957,744
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—429 **6 Claims**



1. For use in an enclosed structure having a ceiling, a transparent window transmissive to light and sun energy and mounted in a wall of said structure, and a floor, an assembly comprising, in combination:

a sheet of material absorptive to said light and sun energy and reflective to heat provided in said structure;

means for mounting said sheet within said structure parallel to and spaced from the adjacent surface of said window so as to provide a space between said sheet and each of said window, ceiling and floor;

means spaced from said ceiling for guiding air along the underside of said ceiling and comprising a plurality of panels pivotal between a closed position wherein said panels are spaced from said ceiling and substantially coplanar with one another so that a path is provided for the guided air between said ceilingand said panels, and an open position wherein said panels are parallel but spaced from one another so as to expose radiation from said ceiling to the interior of said enclosure; and

means for drawing air through the space between said window and said sheet so as to heat said air and for drawing air along the underside of said ceiling;

wherein said sheet is spaced from said window such that air along said adjacent surface is substantially stagnant while air drawn by said means for drawing air, draws air between the substantially stagnant air and said sheet.

4,201,190

SOLAR ENERGY COLLECTOR ASSEMBLY AND SUB-ASSEMBLIES THEREOF

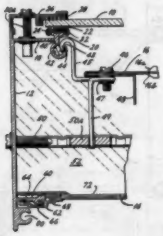
John C. Bowen, Huntingdon Valley, Pa., assignor to Ametek, Inc., Paoli, Pa.

Filed Aug. 21, 1978, Ser. No. 935,406
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—450 **22 Claims**

1. In a solar energy collector assembly including elongated side members having a top and bottom edge, a transparent sheet top cover member disposed at the top of said side members, and a bottom closure member disposed at the bottom of said side members, said side members, transparent sheet and closure member together forming an enclosed space housing

within which is disposed a solar energy collector means, the improvement consisting of:

(a) bottom closure member securing means comprising (i) a projection, extending inwardly into said enclosed housing space, along the length of said side members near the bottom thereof, the inner edge of said projection overlapping the outer portion of said bottom closure member along the periphery thereof, said projection including spring channel retaining tips, and (ii) a spring channel including a portion abutting said closure member on the surface portion thereof opposite that which overlaps the inner edge of said projection, said spring channel adapted to be engaged and retained by said tips, and thereby to secure bottom closure member between said spring channel and said inwardly extending projection;



(b) collector member securing means comprising a plurality of stiff low thermal conductivity wire retainers disposed at spaced intervals about the periphery of said collector, each such retainer being attached to said collector and to said side members; and

(c) top cover securing and sealing means comprising a seal engaging the bottom surface of said top cover along and inward of the periphery thereof and clamping means pressing said top cover downwardly into engagement with said seal, the edge of said bottom horizontally disposed surface between said seal and said periphery being free of engagement with any mating surface to prevent retention of condensate thereon.

4,201,191

LIQUID FUELS VAPORIZATION

John S. Zink, and Robert D. Reed, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Jan. 30, 1978, Ser. No. 873,728
Int. Cl.[2] F24H *1/20*; F22B *13/00*
U.S. Cl. 126—360 A **10 Claims**

9. Apparatus for vaporization of liquids having a boiling point lower than that of water, comprising;

(a) at least a first, narrow planar plenum, oriented with its plane vertical, the first and second walls of said plenum being of metal and of substantial horizontal length;

(b) a plurality of nozzles spaced along the top of said plenum, for injecting fuel gas downwardly into said plenum, between said first and second walls and means to inject combustion air downwardly into said plenum, the bottom of said plenum closed;

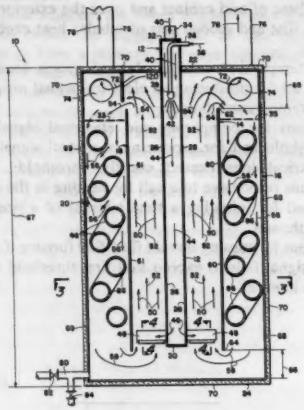
(c) at least a second, narrow planar plenum contiguous with said first plenum;

(d) means to selectively flow said combustion products from the bottom of said first plenum into the bottom of said second plenum through horizontal short lengths of pipe, closed at their outer ends and welded to said first and second walls near the bottom of said first plenum, each of said pipes having a plurality of ports along the underside thereof;

(e) at least a third plenum contiguous with said second plenum;

(f) the outer wall of said third plenum taller than the inner wall of said third plenum, and including a top and bottom closure attached to said outer wall and said third plenum;

(g) said second and third plena filled to a selected level with water;



(h) a plurality of horizontal spaced pipes arranged in zig-zag connection within said third plenum, for carrying liquid to be vaporized; and

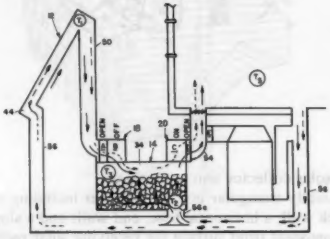
(i) at least one stack means connected to the space above said second and third plena for the escape of cooled products of combustion to the atmosphere.

4,201,192

SOLAR HEAT AIR SYSTEM

DeWayne A. Coxon, and Timothy P. Gates, both of Cedar Springs, Mich., assignors to Jordan College, Cedar Springs, Mich.

Filed Jan. 3, 1978, Ser. No. 866,545
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—422 **4 Claims**



1. In a forced air solar heating system for an environmental space, including a solar collector having a high energy portion and a low energy portion and a heat storage unit having a high energy portion and a low energy portion and a heat storage medium;

dual air mover and damper subassemblies including a first blower and a first damper associated therewith, and a second blower and a second damper associated therewith;

a first duct means for conducting heated air from the high energy portion of said collector through said first blower and first damper to said storage unit high energy portion;

a second duct means for conducting heated air from said storage unit high energy portion to said environmental space;

third duct means for conducting air flow from said environ-

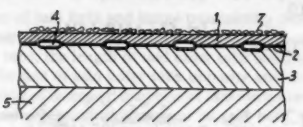
mental space to said storage unit low energy portion and to said collector low energy portion; and thermostatic control circuit means associated with said collector high energy portion, said storage high energy portion, said storage low energy portion, and said environmental space, and connected with said first blower, first damper, second blower, and second damper, for causing selective air flow (a) from said collector to said storage and return, (b) from said storage to said environmental space and return, (c) from said collector to said environmental space and return and (d) from said collector and also through said storage medium to said environmental space and return to both.

4,201,193

SOLAR ENERGY ABSORBING ROOF

Michel Ronc, St-Priest, France, assignor to Elf Union, Paris, France

Filed Mar. 17, 1978, Ser. No. 887,938
Claims priority, application France, Mar. 18, 1977, 77 08152
Int. Cl.[2] I24J *3/02*
U.S. Cl. 126—448 **4 Claims**



1. A solar roofing structure combining the covering and waterproofing functions of a conventional roof with the functions of a solar energy-collecting panel, which can be used to heat or air-condition the premises it covers, and which comprises:

a supporting base;

a layer of insulating material on said base;

waterproofing cover means of a material selected from the group consisting of elastomers and bitumen, the outer surface of which is covered on its upper surface with mineral particles selected from the group consisting of gravel, glass and ceramic particles; and

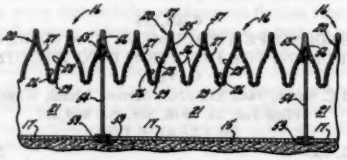
means separate from said waterproofing cover means defining circulation channels for a liquid, in close contact with and below the waterproofing cover means, and between said waterproofing cover means and the insulating material and in contact with each.

4,201,194

SOLAR HEAT COLLECTOR WITH CHANNELED PANEL

Paul A. S. Charles, c/o Heliodyne, Inc. 4571 Linview Dr., Rockford, Ill. 61109

Filed Jan. 6, 1978, Ser. No. 867,467
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—449 **7 Claims**



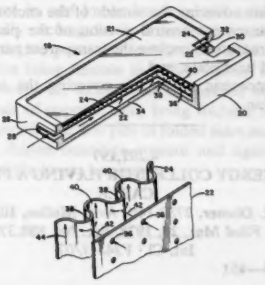
1. A solar heat collector comprising a panel adapted for mounting exteriorly of the wall of a building in spaced relation with the wall whereby a flow space is defined between the panel and the wall, said panel being made of a material which is capable of retaining its shape under a wide range of ambient temperature conditions, said panel being of serpentine cross-section and having an outer side defined by a series of outwardly opening and substantially V-shaped channels, each side wall of each channel being of a permanent shape and of low reflectivity and having a concavely curved outer end portion and a convexly curved inner end portion, the outer end portion of the side wall of each channel merging gradually with the inner end portion thereof.

4,201,195

JET IMPINGEMENT SOLAR COLLECTOR

Ravinder K. Sakhuja, Lexington, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Oct. 25, 1978, Ser. No. 954,727
Int. Cl.[2] F24J *3/02*; F24F *3/04*; F24B *1/06*
U.S. Cl. 126—449 **10 Claims**



7. A solar collector for heating air comprising:

a rigid plastic frame of generally rectangular cross-section, said frame having an upstream endwall with an inlet for admitting air to be heated into the collector and a downstream endwall with an outlet for discharging heated air from the collector;

a glass cover sealably mounted in the top of said frame substantially parallel to the base thereof and adapted to transmit solar radiation into the collector;

a metallic absorber plate adapted to absorb solar radiation transmitted through the cover, said plate spaced between said glass cover and said base and having corrugations forming channels extending from the upstream endwall to the downstream endwall; and

a jet plate mounted between said absorber plate and said base parallel to said absorber plate and having a plurality of circular holes therethrough for directing jets of air upward to impinge against the absorber plate for efficient heating of air passing through the collector, the holes in said jet plate being present at locations of minimum gap between said jet plate and the corrugations of said absorber plate whereby the channels adjacent to the point of impingement of an air jet permit downstream passage of air subsequent to jet impingement with minimal interference to said jets.

4,201,196

SOLAR ENERGY AIR HEATING DEVICE

David A. Zani, P.O. Box 165, Kingshill, St. Croix, V.I. 00850

Continuation-in-part of Ser. No. 795,855, May 11, 1977, Pat. No. 4,078,546. This application Mar. 6, 1978, Ser. No. 884,015
The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—450 **5 Claims**

1. A solar energy air heating device comprising:

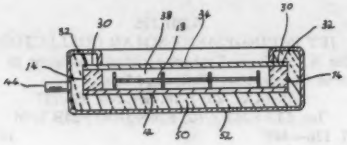
a. a base plate;

b. a wall member extending perpendicular from the plane of the base plate;

c. a panel having a peripheral portion bearing against said wall member to form an enclosure with said base plate and

wall member, said panel having a transparent central portion capable of transmitting solar energy therethrough;

d. a heat absorbing surface mounted within the enclosure, the wall member of the enclosure having an aperture whereby air can be passed therethrough during use to extract solar energy absorbed in the enclosure;



e. insulation covering the outside of the enclosure excepting said transparent central portion of the panel to form a rigid structure to enclose the transparent panel, wall member and base plate; and

f. an elastomeric membrane covering the outside of the insulation.

4,201,197

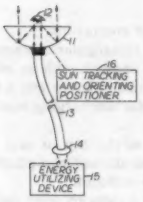
SOLAR ENERGY COLLECTOR HAVING A FIBER-OPTIC CABLE

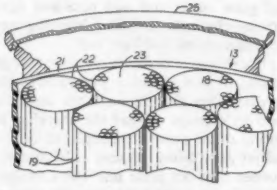
Raymond H. Dismer, 2730 14th Ave., Moline, Ill. 61265

Filed Mar. 20, 1978, Ser. No. 888,376

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—451 **1 Claim**





1. A solar energy concentrating system comprising:

a collector of radiant energy, a fiber optic cable connected to said collector,

said collector having first and second concave reflectors, said second reflector being substantially smaller than said first reflector, each of said reflectors having a front reflecting surface,

means for rigidly supporting said second reflector at a predetermined distance in front of said first reflector, said reflecting surfaces facing each other,

control means connected to said first reflector, said control means being operable to track the sun and to turn said reflecting surface of said first reflector toward the sun, said first reflector being paraboloidal for concentrating radiant solar energy over a wave front coinciding with said reflecting surface of said second reflector,

said fiber-optic cable being connected to said collector by having a first end of said cable for input of radiant energy positioned through an opening in said first reflector to expose said first end to energy reflected from said reflecting surface of said second reflector, said second reflector being concave for concentrating radiant solar energy over a wavefront coinciding with said first end,

lens positioned to receive energy from a second end of said fiber-optic cable at a distance from said input for concentrating solar energy transmitted through said fiber-optic cable on an energy utilizing device, and

wherein said fiber-optic cable has a plurality of fibers of sufficient diameter to transmit infra-red rays of solar energy substantially independent modes, said fibers being divided into groups over a substantially length at said first end of said fiber-optic cable, and an opaque inwardly reflective coating surrounding each of said groups.

4,201,198

ENDOSCOPE HAVING A SEPARABLE CONNECTION TO A PHOTOGRAPHING DEVICE

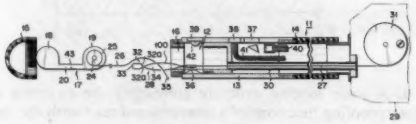
Takeshi Okada, Hachioji, and Mototugu Ogawa, Chofu, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1977, Ser. No. 861,284

Claims priority, application Japan, Dec. 27, 1976, 51-176551[U]

Int. Cl.[2] A61B *1/04*

U.S. Cl. 128—4 **5 Claims**



1. An endoscope comprising:

a sheath;

a distal end portion provided at one end of the sheath;

a photographing device disposed in said distal end portion;

a film feeding wire for feeding a rolled film loaded in said distal end portion;

an operation wire extending through the sheath;

a stop having a diameter larger than the diameter of the film feeding wire connected to one end of the film feeding wire; and

a latch formed of an elastic wire for connection between respective ends of the film feeding wire and the operation wire and comprising

a first loop connected to that one end of the operation wire which is disposed nearer said one end of the sheath,

a second loop disposed opposite to said one end of the operation wire with respect to the first loop and having such an opening as prevents the stop from passing through, and a neck formed by those portions of the elastic wire which are between the first and second loops.

4,201,199

ENDOSCOPE ATTACHMENT TO A VIEWING INSTRUMENT FOR INSERTION INTO THE UTERINE CAVITY

Donald C. Smith, 7442 SE. 22nd, Mercer Island, Wash. 98040

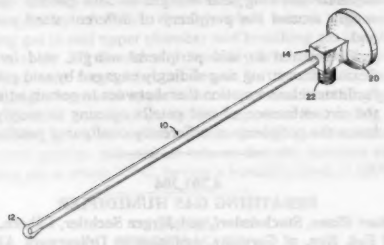
Filed Jan. 13, 1978, Ser. No. 869,257

Int. Cl.[2] A61B *1/30*

U.S. Cl. 128—7 **2 Claims**

1. An attachment for an endoscope of the type to be inserted through the cervix into the uterine cavity and having a light and image transmitting tube with an eyepiece end for viewing through the tube, said eyepiece end having a portion of increased transverse dimension with respect to the transverse dimension of said tube, and a distal viewing end for location close to the uterine cavity wall under investigation, said attachment comprising:

a rigid, transparent, generally spherical bulb of a diameter substantially greater than the diameter of the light and image transmitting tube for separating the walls of the uterine cavity, said bulb having a relatively thin wall and an inside radius of approximately between 3 and 4mm, said bulb being carried by the end of a rigid outer tube to which said bulb is smoothly faired, said outer tube having an inside diameter approximately equal to the outside



diameter of said light and image transmitting tube so that said outer tube snugly fits over said light and image transmitting tube, the length of said outer tube being such that when the end of said outer tube opposite said bulb abuts the portion of increased diameter of said eye piece end, the distal end of the outside surface of said bulb is spaced approximately between 2 to 3 mm beyond the distal end of said light and image transmitting tube.

4,201,200

APPLIANCE FOR THE CARE AND CLEANING OF TEETH AND GUMS

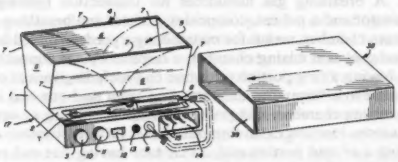
Otto Hübner, Mauerkircher Strasse 199, Herzog Park, Munich (8000 Munchen 81), Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,525

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1977, 2735427; Dec. 15, 1977, 2756042

Int. Cl.[2] A61H 9/00

U.S. Cl. 128—66 **9 Claims**



1. In an appliance, for the cleaning and care of teeth and gums, that employs an electrically-driven pump means for discharging from the appliance a high pressure, pulsating, water jet, the improvement comprising, in combination:

a tube pump that includes an elongated flexible tube, along which a water column is to be moved, a backing member for a portion of the flexible tube, a rotor that includes arcuately spaced rollers for engaging, compressing and pinching portions of said flexible tube against said backing member to advance the water in the tube along the tube;

means for introducing air into the water in the tube upstream of the backing member of the tube pump;

the tube being resilient, whereby as the pump's rotor rotates, the water-air mixture is pressurized by a pair of spaced rollers that pinch the tube against the backing member, and the water-air mixture is then pressurized by compression of the compressible air therein, so that upon release of pressure of the leading roller against the resilient tube and backing member, the expanding compressed air in the water-air mixture expands to aid in providing a pulsating pressurized discharge of a water jet from the pump means.

7. In an appliance for treating teeth and gums with a pressurized, pulsating, water jet delivered from a refillable water container by tube means, pump means, and electric motor means, the improvement of a compact construction for such appliance, permitting same to be packaged and stored as a travel appliance, comprising in combination:

a lower housing of substantially rectangular configuration with a substantially top planar surface, said lower housing being of a size adapted to house therein said tube means, pump means and electric motor means; and

an upper, refillable, water-proof, foldable when inoperative, container having a bottom wall with a downwardly extending inlet nipple thereon, adapted for effecting flow communication from the interior of said container to the tube means in said lower housing, said container being substantially rectangular in cross-section and being provided with two pairs of opposed sides, a first pair of opposed sides being flexible to fold inwardly toward each other between the second pair of opposed sides, and the second pair of opposed sides being foldable toward each other to overlie the first pair of folded sides and to overlap to a flat folded condition toward and against said top surface of the lower housing.

4,201,201

ORTHOPEDIC DEVICE FOR PROPPING AND ALIGNING THE VERTEX END POINT OF A SUNKEN NOSE

Ruben L. Vergara, 28-5 Graciela, Col., Guadelupe Tepeyac, Mexico City, 14, Mexico

Continuation of Ser. No. 727,218, Sep. 27, 1976, abandoned. This application May 26, 1978, Ser. No. 910,004

Int. Cl.[2] A61F 5/08

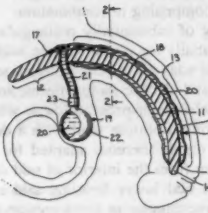
U.S. Cl. 128—76 C **12 Claims**

1. A device for improving the appearance of a nose, said device comprising two separate propping elements each having an elongated flexible body portion and two terminal portions at the respective ends of said body portion, and each element substantially concealed from view when so accommodated in one nostril of the nose that said flexible body portion urges said terminal portions into contact at the regions of the nasal fossa and of the tip of the nose with the mucous membrane bounding the one nostril to thereby prop the tip region and prevent the undesired shifting of said propping element both into the nasal fossa and out of one nostril, said body portion being provided with a projection having outer surface so shaped as to correspond to and engage the mucous membrane at the region of the septum when said element is accommodated in the one nostril.

4,201,202
PENILE IMPLANT

Roy P. Finney, Tampa, Fla., and Henry W. Lynch, Racine, Wis., assignors to Medical Engineering Corp., Racine, Wis.

Filed Sep. 25, 1978, Ser. No. 945,757
Int. Cl.[2] A61F 5/00
U.S. Cl. 128—79 8 Claims

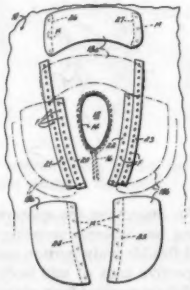


1. A penile implant comprising:
(a) an elongated, flexible rod of physiologically inert material having a relatively short proximal portion adapted to be inserted into the root end of the corpus cavernosum of a penis, and a longer distal portion adapted to be implanted in the corpus cavernosum of the pendulous penis;
(b) a sleeve axially positioned about an intermediate section of the distal portion of said rod and sealed at each end of the rod to form an elongated pressurizable chamber;
(c) a pressure bulb for pressurizing fluid for said chamber;
(d) means connecting the chamber and the pressure bulb so that pressurizing fluid can be introduced into and removed from the chamber; and
(e) valve means for controlling the flow of fluid between the chamber and the bulb.

4,201,203
KNEE BRACE

Leslie T. Applegate, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio

Filed Jun. 26, 1978, Ser. No. 919,378
Int. Cl.[2] A61F 3/00
U.S. Cl. 128—80 C 13 Claims

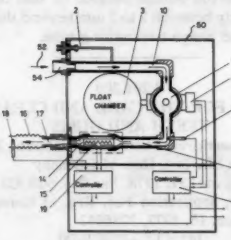


1. A knee brace comprising:
a one-piece tubular sleeve exhibiting substantial circumferential elasticity in a knee-encircling direction and configured to encircle the leg of a user in the region extending between points above and below the knee, said sleeve having a circumference when unstretched which is less than the girth of a user's leg in the region of the knee to apply inwardly directed compressive force to the user's knee region when encircled thereabout,
said sleeve having an opening therein defined by a peripheral margin to permit projection of the user's patella therethrough when said sleeve encircles said user's knee region,
a substantially inelastic flexible drawstring ring connected to and coextensive with said margin to prevent enlargement of said patella opening and to maintain snug engagement between said opening and the periphery of a user's patella projecting therethrough when the user's knee joint is flexed and said elastic sleeve stretched, said inelastic flexible drawstring ring being adjustable in circumference to facilitate drawing said margin of said patella opening snugly around the periphery of different sized patellas, and
a guide secured to said peripheral margin, said inelastic flexible drawstring ring slidingly engaged by said guide to facilitate relative motion therebetween to permit adjusting the circumference of said patella opening to snugly embrace the periphery of differently configured patellas.

4,201,204
BREATHING GAS HUMIDIFIER

Gerhart Rinne, Stockelsdorf, and Jürgen Sachtler, Lübeck, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 19, 1978, Ser. No. 870,634
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, 2702674
Int. Cl.[2] A61M 16/00
U.S. Cl. 128—203.27 2 Claims



1. A breathing gas humidifier for connection between a respirator and a patient, comprising a water and breathing gas mixture chamber, means for maintaining a predetermined level of water in said mixing chamber, a respiratory gas connection line having a first portion with one end including means connectable to a respirator and extending from said one end into said mixing chamber, said gas connection line having an opposite second portion extending out of said mixing chamber and having a second portion end, an air tube having one end connected to said second portion end and an opposite end including means connectable to said respirator, first heater means in said mixing chamber for heating the water therein to vaporize it and to permit it to be picked up by the breathing gas being passed over the water level in said mixing chamber through said gas connection line second portion, second heater means in said gas connection line second portion for overheating the breathing gas with vaporized water from said mixing chamber, temperature-sensing and control means connected to said first and second heater means, said means for maintaining a predetermined level of water in said mixing chamber including a float chamber, and means connected to said float chamber containing distilled water for supplying water to said float chamber, a float valve in said float chamber for closing the connection between said distilled water containing means and said float chamber when a predetermined level of water is reached in said float chamber, said mixing chamber comprising a lower vaporizer chamber of a size substantially smaller than said float chamber for containing a quantity of water substantially smaller than a quantity of water in said float chamber and an upper water vapor and breathing gas mixing chamber, said

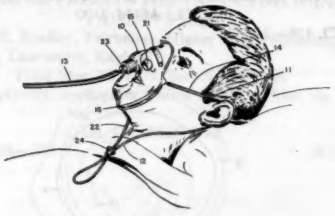
first heater means disposed in said lower vaporizer chamber, said lower vaporizer chamber being sufficiently small so that said first heater means vaporizes substantially all the water therein, and a top conduit connection connected between said upper water vapor and breathing air mixing chamber and the top of said float chamber whereby the predetermined level of water in said float chamber is maintained in said vaporizer chamber, said temperature sensing and control means controlling said first heater means for heating and vaporizing said smaller quantity of water thereby when mixed with said breathing gas in said upper chamber said breathing gas is maintained at about 35° C. and at a humidity level of 100%, and controlling said second heater means for overheating said breathing gas from said upper water vapor and breathing gas mixing chamber to at least partially compensate for cooling of the breathing gas with vaporized water in said gas connecting line second portion and said air tube to thereby maintain said breathing gas at about 35° C. having a humidity level of 100%.

4,201,205

OXYGEN MASK

Victor L. Bartholomew, Hemet, Calif., assignor to Hudson Oxygen Therapy Sales Company, Temecula, Calif.

Filed Jan. 20, 1978, Ser. No. 871,151
Int. Cl.[2] A61M *15/00*
U.S. Cl. 128—205.25 **12 Claims**



1. An oxygen mask having improved means for being secured over the nose and mouth of a user, the improvement comprising;

non-elastic flexible tubing means adapted for extending over and behind both ears of the user and downwardly beneath the user's chin and having two ends, and two lengths of elastic flexible tubing, each length having a first and second end, each first end being secured to a different one of said non-elastic tubing ends, and means securing each second end of said elastic flexible tubing to said mask and wherein said non-elastic tubing ends and said first elastic tubing ends are adapted to be joined between said mask and the user's ears.

4,201,206

HEAT RECEIVER FOR DIVERS

Lorne A. Kuehn, Downsview, and Louis A. Pogorski, Toronto, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Canadian Minister of National Defence, Ottawa, Canada

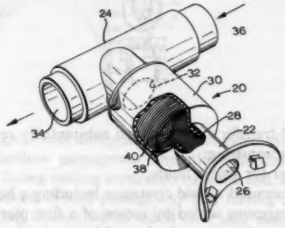
Filed Sep. 18, 1978, Ser. No. 943,491
Int. Cl.[2] A62B *7/00*
U.S. Cl. 128—201.13 **4 Claims**

1. A device for collecting sensible heat from a diver's exhaled breath and for exposing breathing mixture to this heat during inhalation to limit a diver's respiration heat loss, the device comprising:

a housing having poor heat-conducting qualities and adapted to be coupled to a breathing system adjacent to a portion of the system which is normally in contact with a diver's mouth, the housing having first and second ports between which breathing mixture is to pass along a flow path in one direction and between which exhaled breath will pass in the opposite direction;

a plurality of thin heat-conductive elements spaced-apart in generally parallel relationship inside the housing, these elements being arranged to lie across said flow path in series and being perforated for passage of the breathing mixture and of the exhaled breath sequentially through the elements;

a plurality of thin, relatively non-conductive and non-hygroscopic spacers sandwiched one between each adjacent pair of said heat-conductive elements, each of the spacers also being perforated whereby flow of exhaled breath will



warm the heat conductive elements sequentially so that each element will be slightly cooler than the last element and there will be no direct heat conduction from one element to the next element, and whereby there will be minimal heat stored in the spacers and the moisture content of the exhaled breath will be substantially unaffected by passage through the device so that upon drawing breathing mixture through the device there will be a gradual warming of this mixture as it collects heat from the elements and a substantial part of the sensible heat originally in the exhaled breath will be reclaimed by the breathing mixture; and

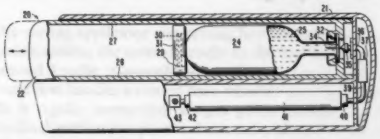
means adapted to couple the housing to a breathing system.

4,201,207

BLADDER FOR LIQUID DISPENSER

Richard G. Buckles, Redwood City, and Harold M. Leeper, Mountain View, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 598,490, Jul. 23, 1975, abandoned, which is a continuation-in-part of Ser. No. 344,861, Mar. 26, 1973, abandoned. This application Nov. 26, 1976, Ser. No. 745,132
The portion of the term of this patent subsequent to Nov. 23, 1993, has been disclaimed.
Int. Cl.[2] A61M *5/00*; B65D *35/18*; C08C *19/00, 19/04*
U.S. Cl. 128—214 F **17 Claims**



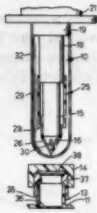
1. In a dispenser for dispensing a liquid under pressure comprising an expansible elastic bladder for holding the liquid under pressure, the elastic force in whose walls provides the force by which the liquid is dispensed, a flow passage from the bladder, and flow metering means in the flow passage, the improvement wherein the bladder is made of vulcanized, synthetic polyisoprene having a stress relaxation of less than about 10% and a low frequency hysteresis of less than about 10%.

4,201,208

STERILE CONNECTING DEVICE

Orlando D. Cambio, Jr., Bristol, Wis., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 30, 1977, Ser. No. 855,647
Int. Cl.[2] A61M 5/00
U.S. Cl. 128—214.2 **10 Claims**



1. A fluid transfer system which substantially reduces contamination comprising:

a container for sterile fluids;

a closure secured to said container including a hollow tubular passageway sealed by means of a first pierceable diaphragm and a second pierceable diaphragm, said first diaphragm positioned remote from said container and said second diaphragm positioned proximal thereto to provide a sterile chamber therebetween and said closure including a shoulder section disposed outwardly from said first diaphragm;

a hollow piercing pin having a pointed end and adapted to be inserted into said tubular passageway and penetrate said diaphragms;

a hub member extending from said piercing pin opposite said pointed end;

a sheath surrounding the pointed end of said piercing pin and in direct contact with the pointed end thereof, said sheath attached to said hub member and defining a shoulder member intermediate a portion contacting said pointed end and a portion attached to said hub member, said sheath surrounding said piercing pin including said pointed end and said hub member in a uniform manner;

so that upon contact with said first diaphragm said portion of said pin sheath surrounding the pointed end of said piercing pin will pierce through said first diaphragm and upon further movement said sheath shoulder member will contact said shoulder section of said container closure, and said pin sheath surrounding the pointed end of said piercing pin will break away laterally exposing the pointed end of said piercing pin and said sheath will uniformly surround the hub of said piercing pin as said pointed end of said piercing pin pierces through said second diaphragm.

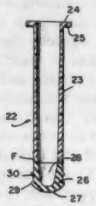
4,201,209

MOLDED HYPODERMIC PLUNGER WITH INTEGRAL SHAFT AND ELASTOMERIC HEAD

Harry H. LeVeen, 800 Poly Pl., Brooklyn, N.Y. 11220, and Robert F. LeVeen, 122 S. 51st St., Omaha, Nebr. 68132

Filed May 24, 1978, Ser. No. 908,945
Int. Cl.[2] B29D 9/00; B29F 1/00; A61F 5/315
U.S. Cl. 128—218 P **1 Claim**

1. A molded plunger for a hypodermic syringe having a rigid thermoplastic shaft and a head portion made of a thermoplastic polymer having elastomeric properties compatible with the



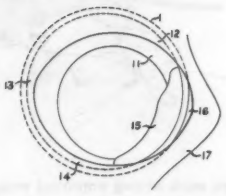
material of said shaft and integrally united therewith by coinjection molding the materials of said shaft and said head.

4,201,210

VETERINARY OCULAR RING DEVICE FOR SUSTAINED DRUG RELEASE

David E. Hughes, and George W. Pugh, Jr., both of Ames, Iowa, assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 698,632, Jun. 22, 1976, abandoned.
This application Nov. 28, 1977, Ser. No. 855,495
Int. Cl.[2] A61M 7/00
U.S. Cl. 128—260 **16 Claims**



1. A method for releasing over a prolonged period of time a therapeutic agent into the region of an eye of an animal comprising inserting into the conjunctival sac of said eye a substantially ring-shaped device releasably containing said therapeutic agent, and releasing said agent into said eye region over a prolonged period.

4,201,211

THERAPEUTIC SYSTEM FOR ADMINISTERING CLONIDINE TRANSDERMALLY

Santosh K. Chandrasekaran, Palo Alto, Calif.; Siegfried Darda, Ingelheim am Rhein, Fed. Rep. of Germany; Alan S. Michaels, Atherton, and Gary W. Cleary, Palo Alto, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif. and Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

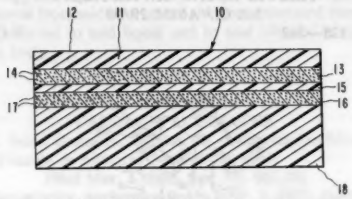
Filed Jul. 12, 1977, Ser. No. 815,033
Int. Cl.[2] A61F 7/02
U.S. Cl. 128—268 **14 Claims**

1. A therapeutic system in the form of a skin patch for administering clonidine continuously and transdermally through a predetermined area of unbroken skin in a controlled manner for a prolonged time period to effect central alpha-adrenergic stimulation comprising:

(a) a backing that is substantially impermeable to clonidine, one face of which forms the top of the patch;

(b) a clonidine reservoir adjacent the opposite face of the backing that contains an amount of clonidine sufficient to provide clonidine for said prolonged time period at a central alpha-adrenergic stimulating rate;

(c) means for releasing clonidine from the reservoir at said rate to said predetermined area of skin; and



(d) means for affixing the patch to said predetermined area of skin.

4,201,212

SURGICAL APPARATUS FOR USE IN SYRINGING A PATIENT'S EAR

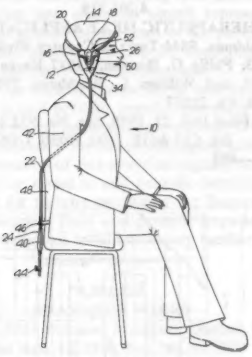
Margaret E. Bradley, Fairholme, Higher Hill, Tockholes, Near Darwen, Lancashire, England

Filed Mar. 20, 1978, Ser. No. 888,366

Claims priority, application United Kingdom, Mar. 24, 1977, 12368/77

Int. Cl.[2] A61F *5/44*

U.S. Cl. 128—275 **8 Claims**



1. Surgical apparatus for use in the syringing of a patient's ear, comprising a receptacle having an upwardly extending wall shaped to fit the side of the patient's head, the wall having a first downwardly extending recess to receive the ear to be syringed with the portions of the wall on either side of the recess extending upwardly, in front of and behind the ear, the wall having a second downwardly extending recess opposite the said first recess, through which a syringe can be inserted to pass across the receptacle and into the ear, and fastening means to hold the receptacle in position on the patient's head and urge the wall of the receptacle into sealing engagement with the side of the patient's head, the receptacle comprising a rigid frame member defining the upper extremities of the wall of the receptacle, and a flexible bag releasably connected to the frame member in such a manner that the flexible bag is suspended from the frame member.

4,201,213

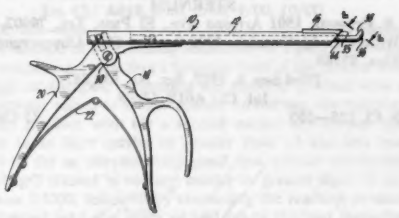
SURGICAL TOOL

Paul R. Townsend, Hull, Mass., assignor to Codman & Shurtleff, Inc., Randolph, Mass.

Filed Jan. 30, 1978, Ser. No. 873,347

Int. Cl.[2] A61B *17/32*

U.S. Cl. 128—312 **4 Claims**



1. A surgical tool comprising: an elongated slidable barrel having a hollow passageway therethrough and having an outwardly facing cutting section on its distal end; an elongated shaft positioned in said passageway and having an inwardly facing cutting section on its distal end, said inwardly facing cutting section projecting beyond said distal end of said barrel, said cutting sections adapted to oppose each other in jaw-like fashion; and means for sliding said barrel over said shaft to change the spacing between said respective jaw-like cutting sections and to apply force to the object held between the same, said outwardly facing cutting section being formed on an insert, said insert being attached to said distal end of said barrel.

4,201,214

APPLICATORS

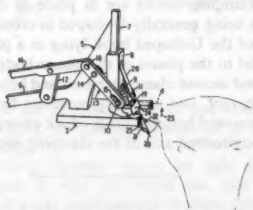
William B. Whiteley, Via Orange, Australia, assignor to Marie Ellen Whiteley, Via Orange, Australia, a part interest

Filed Sep. 16, 1977, Ser. No. 834,033

Claims priority, application Australia, Aug. 15, 1977, PD1238

Int. Cl.[2] A01K *11/00*; A61B *17/00*

U.S. Cl. 128—330 **12 Claims**



1. An ear tag applicator comprising first and second handles, means connecting the second handle to the first handle so that the second handle is movable in a plane towards and away from said first handle; a slotted base member to which said first handle is rigidly connected; a rigid guide member having a longitudinal surface in a plane substantially normal to the plane of said base member; a spear member adapted for mounting thereon of a tag for application to an animal's ear, said spear member being adapted to travel lengthwise of said rigid guide member; pivot means permitting said spear member to pivot relative to said guide member, means connecting said second handle and said spear member such that when said second handle is moved towards said first handle said spear member is forced to move relative to said rigid guide member towards said base member and wherein the slotted portion of said base member is so configured that the portion of the spear member

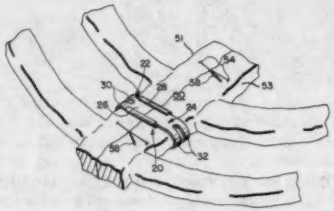
carrying the ear tag may enter and pivot in said slot relative to said guide member at the end of the downstroke of said spear member relative to said rigid guide member.

4,201,215

APPARATUS AND METHOD FOR CLOSING A SEVERED STERNUM

E. S. Crossett, 1501 Arizona Ave., El Paso, Tex. 79902, and Willard L. McCormick, 4906 Souther SE., Albuquerque, N. Mex. 87100

Filed Sep. 6, 1977, Ser. No. 830,567
Int. Cl.[2] A61B *17/08*
U.S. Cl. 128—335 **11 Claims**



1. A sternum clamp comprising:

a first elongate clamp member including a substantially planar body portion and turned over flange portions on opposite sides thereof defining a pair of longitudinally extending recesses; and

a second elongate clamp member including a substantially planar body portion slidingly received in the recesses of said first clamp member so as to overlie at least a part of the body portion of said first clamp member;

said first and second clamp members each including a pair of clamping hooks at one end thereof, said pairs of clamping hooks, in use, engaging opposed sides of the severed sternum, and each of said pairs of clamping hooks being spaced apart to define means for enabling engagement with the respective jaws of a pair of pliers so that the two members can be brought into tighter engagement when said clamping hooks are in place in the sternum, said hooks being generally U-shaped in cross-section, the free ends of the U-shaped hook lying in a plane substantially parallel to the planes of the planar body portions of said first and second clamp members and being rounded at the tips thereof, said clamping members being fabricated of stainless steel having a grain which extends transversely to the longitudinal axis of the clamping members.

4,201,216

ABSORBABLE COATING COMPOSITION FOR SUTURES

Frank V. Mattei, Piscataway, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 751,002, Dec. 15, 1976, abandoned. This application Feb. 9, 1979, Ser. No. 10,761
Int. Cl.[2] A61L *17/00*
U.S. Cl. 128—335.5 **23 Claims**

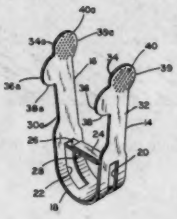
1. A synthetic, absorbable, multifilament suture having improved and substantially equal dry and wet tie-down properties, said suture being coated with from about 2 to 15 percent by weight of a composition comprising a mixture of a substantially water-insoluble, absorbable salt of a C_6 or higher fatty acid and an absorbable, film-forming polymer, the ratio of said fatty acid salt to said polymer being from about 1:4 to 4:1.

4,201,217

NOSTRIL EXPANDER

Robert L. Slater, 7102 Grenlock Dr., Sylvania, Ohio 43560

Filed Jul. 12, 1978, Ser. No. 923,979
Int. Cl.[2] A61M *29/00*
U.S. Cl. 128—342 **6 Claims**



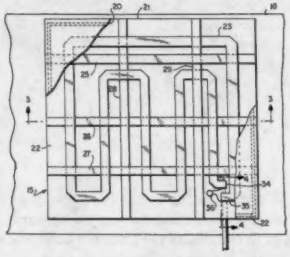
1. A nostril enlarging device comprising: a U-shaped member of sheet material with flexible upstanding legs having anterior, posterior, and upper end side edges; said posterior side edge of each leg having a rounded protuberance for locking into the lower posterior nostril cavity; said anterior edge of each leg being provided with a rounded protuberance having a lower concave surface for engaging the anterior nostril wall; said anterior protuberances being spaced upwardly from said posterior protuberances so that the angular distance between the edges of the anterior and posterior protuberances is greater than the distance between the edged of the posterior protuberance and the directly opposite anterior edge of the leg; and said legs being constructed and arranged for resilient spreading action.

4,201,218

THERAPEUTIC HEAT APPLICATION

Henry L. Feldman, 8844 Town & Country Blvd., Ellicott City, Md. 21043; Philip G. Berman, 11517 Karen Dr., Potomac, Md. 20854, and William L. Washburn, 7704 Jansen Dr., Springfield, Va. 22152

Filed Dec. 22, 1978, Ser. No. 972,346
Int. Cl.[2] A61F *7/00*; H05B *3/06*
U.S. Cl. 128—402 **5 Claims**



1. A portable therapeutic heating device for localized heating of a body part comprising the combination of

first and second flexible thermally conductive and electrically nonconductive sheets of substantially liquid impermeable material bonded to each other along their margins to form a sealed envelope;

a thermally conductive and electrically nonconductive liquid contained in and substantially filling said envelope;

an electric heat source comprising a semiconductor electron valve immersed in said liquid;

bandage means attached to said envelope for holding said

envelope in contiguous heat-transferring relationship with a selected portion of a body;

a portable source of electrical energy; and

control circuit means for interconnecting said source of energy and said valve, whereby said valve is energizied by current from said source and the heat generated thereby is transferred to said liquid and to said selected portion of the body.

4,201,219

CARDIAC PACE-MAKER

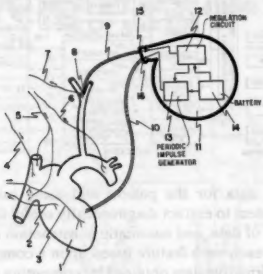
José L. Bozal Gonzalez, C/Tilos, 30 - Urbanizacion Montecarlos, Pozuelo de Alarcon, (Madrid-23), Spain

Filed Mar. 3, 1978, Ser. No. 883,251

Claims priority, application Spain, Mar. 3, 1977, 226.859[U]

Int. Cl.[2] A61N *1/36*

U.S. Cl. 128—419 PG **3 Claims**



1. A cardiac pace-maker comprising:

neurodetector means, connectable to nerve vias or receivers in the heart of a patient, for detecting a train of nerve impulses therein and for converting such detected train of nerve impulses into electrical signals representative of physiological activity of the heart of the patient;

periodic impulse generator means for supplying electrical impulses to the heart of the patient; and

regulation circuit means, connected to said neurodetector means and to said periodic impulse generator means, for generating a modifying signal proportional to the cardiac frequency necessary for the physiological activity of the heart as a function of said electrical signals, for supplying said modifying signal to said periodic impulse generator means, and for thereby modifying the frequency of said electrical impulses from said periodic impulse generator means to correspond to said necessary cardiac frequency.

4,201,220

BRASSIERE WIRES

Ross F. Rowell, 5361 Belmore, Montreal, Quebec, Canada

Filed Apr. 19, 1978, Ser. No. 897,850

Int. Cl.[2] A41C *1/14*

U.S. Cl. 128—476 **8 Claims**

1. In an elongated wire for use as a stiffening member in garments, the improvement wherein said wire has at least one flexible end, said end having a sheath of a flexible material thereabout, said sheath encasing a portion of said wire end which has been detached from the main body portion of the wire.

4,201,221

DIAGNOSTIC TEST FOR ALLERGIC DISORDERS AND KIT THEREFOR

Majid Ali, 19 Edgemont Pl., Teaneck, N.J. 07666, and Donald J. Nalebuff, 89 Lake Shore Dr., Oakland, N.J. 08106

Filed Apr. 14, 1978, Ser. No. 896,296

Int. Cl.[2] A61B *5/00, 6/00, 9/00, 10/00*

U.S. Cl. 128—630 **14 Claims**

1. A method of determining sensitivity of a patient to allergens comprising contacting a biologic fluid of the patient with anti-IgE or allergen; contacting the reaction product with a non-immune serum of a first animal; contacting the resulting reaction product with (a) a second animal anti-human IgE diluted in an inert carrier to greater than 1:5 and less than 1:1000 or (b) an enzyme conjugated first animal anti-second animal IgG diluted in an inert carrier to greater than 1:5 and less than 1:1000, followed by contacting the reaction product thus formed with the other of said (a) or (b); and thereafter contacting the reaction product thus formed with a chromogenic reagent capable of reacting with the enzyme to develop color.

4,201,222

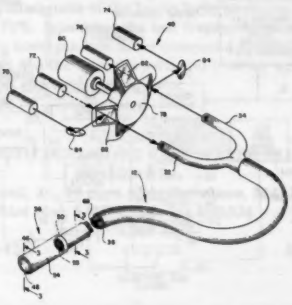
METHOD AND APPARATUS FOR IN VIVO MEASUREMENT OF BLOOD GAS PARTIAL PRESSURES, BLOOD PRESSURE AND BLOOD PULSE

Thomas Haase, 2996 Alta Laguna, Laguna Beach, Calif. 92651

Filed Aug. 31, 1977, Ser. No. 829,420

Int. Cl.[2] A61B *5/02, 5/00*

U.S. Cl. 128—634 **7 Claims**



1. A catheter for use in making at least one blood-related measurement including the partial pressure of at least one blood gas comprising:

wall means defining chamber means for light absorption spectral analysis of said one blood gas, said chamber means being of a size small enough to allow the chamber to be placed within a blood carrying member of a human body, said chamber means having first and second spaced apart regions defining a void space therebetween;

said wall means including a semi-permeable membrane at said first region of the chamber means, said wall means having an interior surface facing toward said chamber means, said semi-permeable membrane being permeable to at least said one blood gas and substantially not permeable to blood whereby when the semi-permeable membrane is placed in contact with blood it allows said one blood gas to pass through the semi-permeable membrane into the chamber means to fill the void space and substantially prevents the blood from passing through the semi-permeable membrane into the chamber means so that the blood gas in the chamber means is separated from the blood;

first elongated light-conducting means for conducting light to said second region of said chamber means so that the light can pass along a light path through said void space and through the blood gas in said chamber means and be at least partially absorbed by said one blood gas;

second elongated light-conducting means for conducting light away from the chamber;

means for attaching the first and second light-conducting means to said chamber means;

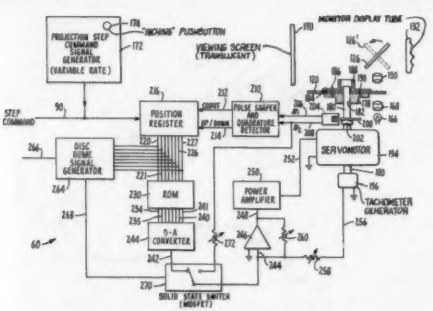
a reflector within said chamber means including a reflective coating on said interior surface of said membrane for receiving light at said first region of the chamber means after the light has passed through at least some of the void space and the blood gas in the chamber means, the light path from the first elongated light-conducting means to the reflector being unobstructed except for the blood gas in the chamber means, said reflector reflecting at least some of the light it receives toward the second elongated light-conducting means for transmission away from the chamber means whereby an indication of the partial pressure of said one blood gas can be obtained; and

said semi-permeable membrane being resiliently deformable into the void space by the blood with which it is placed in contact whereby blood pressure and heart rate information can be obtained.

4,201,223
INTERNAL BODY ORGAN MOTION PICTURE SYNTHESIZING APPARATUS

Howard H. Barney, Los Altos Hills, Calif., assignor to Dunn Instruments, Inc., San Francisco, Calif.

Filed Jun. 20, 1977, Ser. No. 808,340
Int. Cl.² A61B *1/04*
U.S. Cl. 128—653 **8 Claims**



1. Internal body organ motion picture synthesizing apparatus, comprising:

film moving means for so intermittently moving a piece of photographic film as to serially present a plurality of areas thereof for exposure during a cycle of a cyclically functioning internal body organ; and

synchronizing means for substantially synchronizing the presentation of each of said areas for exposure with the occurrence of a corresponding phase of successive cycles of said cyclically functioning internal body organ.

4,201,224
ELECTROENCEPHALOGRAPHIC METHOD AND SYSTEM FOR THE QUANTITATIVE DESCRIPTION OF PATIENT BRAIN STATES

E. Roy John, 930 Greacen La., Mamaroneck, N.Y. 10546

Filed Dec. 29, 1978, Ser. No. 974,445
Int. Cl.² A61B *5/04*
U.S. Cl. 128—731 **23 Claims**

1. The method of determining the brain state of a patient including the steps of:

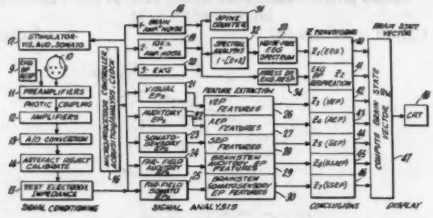
(a) attaching a plurality of electrodes to the scalp of a comatose patient or a patient with other brain dysfunctions to detect the patient's brainwaves in the form of electroencephalographic (EEG) and evoked response (EP) data;

(b) amplifying the electrical signals detected at each electrode;

(c) using a programmed computer based system as the control for stimulating the patient with a series of multi-sensory stimulations to elicit evoked responses from cortex and brain stem;

(d) obtaining and analyzing on-line digital EEG or EP data by connecting analog-digital converters to each amplifier, and digitizing all data as it is gathered;

(e) obtaining sets of on-going EEG and average evoked



response data for the patient and using said computer based system to extract diagnostically useful features from such sets of data, and automatic construction of a Z-transform for each such feature based upon a comparison with stored normative data obtained by computing mean values and standard deviations for each feature from groups of subjects or patients without head trauma or brain dysfunction;

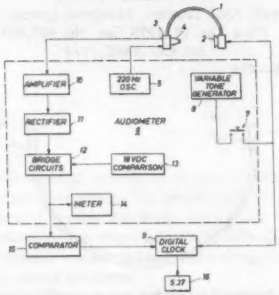
(f) computing a state vector for the patient comprising a vector sum based upon those Z-transformed features which are significantly deviant from normative values; and

(g) visually displaying the length (severity), orientation (quality) and change with time of said state vector.

4,201,225
METHOD AND APPARATUS FOR MEASURING STIMULATED ACOUSTIC REFLEX LATENCY TIME

James W. Bethea, III, 1421 Rosedown St., Longview, Tex. 75604; O. Clayton Mitchell, 905 Judson Rd., and George B. Richards, 805 Coleman, both of Longview, Tex. 75601

Filed Sep. 2, 1977, Ser. No. 830,162
Int. Cl.² A61B *5/12*
U.S. Cl. 128—746 **14 Claims**



1. A method for computing the stimulated response time of the human auditory system, comprising:

maintaining a first tone at a constant frequency and sound pressure level in one ear, of a patient,

introducing a second tone into the same or the other ear, of said patient,

detecting the change in acoustic compliance of one of said ears corresponding to the introduction of said second tone, and

calculating the time delay between the introduction of said second tone and said change in acoustic compliance, and comparing said time to an acceptable time delay value as a measure of the hearing ability of the patient.

4,201,226

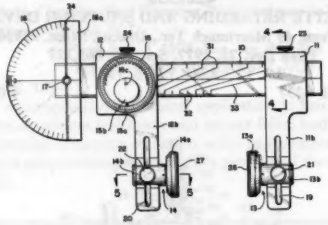
COMBINATION INSTRUMENT FOR TAKING BIOMECHANICAL MEASUREMENTS

Robert L. Phillips, 900 Eighth Ave. S., Great Falls, Mont. 59405

Filed Jul. 26, 1977, Ser. No. 819,003

Int. Cl.[2] A61B *5/10*

U.S. Cl. 128—774 **4 Claims**



1. A combination measuring instrument for use in the taking of various biomechanical measurements, comprising a scaled straightedge; a set of elongate, mutually cooperative, caliper arms slidably attached to the straightedge for relative movement therealong and including means for rigidly fixing said arms in adjusted positions relative to each other and to the straightedge; a set of body-contacting pads having stub stem members, respectively, slidably attached to respective caliper arms, for movement longitudinally therealong, and having body-contacting pad members pivotally attached to the respective stem members so as to accommodate body irregularities; means for fixedly securing said pads to said arms in adjusted relative positions; and a gravity meter attached to one of said caliper arms.

4,201,227

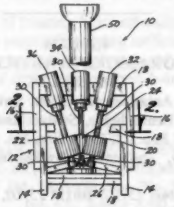
CORN SHELLING DEVICE

Hamid Al-Jalil, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 13, 1978, Ser. No. 869,375

Int. Cl.[2] A01F *11/06*

U.S. Cl. 130—8 **8 Claims**



1. A corn sheller comprising,

a support means having a vertical axis therethrough,

a plurality of rollers rotatably mounted within said support means with the longitudinal axis of each of said rollers disposed at a first acute angle with said vertical axis of said support means, each of said rollers having a plurality of projections on the outer surface thereof adapted for rubbing kernels off an ear of corn, and

power means for rotating each individual roller at unequal speeds.

4,201,228

NON-TOBACCO CONTAINING SMOKING PRODUCT

Olga Lewinger, 11 Niles Pl., Staten Island, N.Y. 10314

Filed Jun. 13, 1977, Ser. No. 805,989

Int. Cl.[2] A24D *1/18*; A24C *5/00*

U.S. Cl. 131—2 **6 Claims**

2. A tobacco substitute, smoking product having the characteristics similar to tobacco containing cigarette products but without containing nicotine, the product consisting of 55% sugar beet leaves, 25% white beet leaves, 10% sugar cane leaves and 10% of the white inner part of the grapefruit peel.

4,201,229

PROCESS FOR TREATING A FLOW OF TOBACCO LEAVES

Jacques Chouteau, Bergerac, and Pierre Magne, Saumur, both of France, assignors to Service d'Exploitation Industrielle des Tabacs et des Allumettes, France

Filed Jul. 22, 1977, Ser. No. 818,216

Claims priority, application France, Jul. 22, 1976, 76 22316

Int. Cl.[2] A24B *3/00, 5/00, 5/14*

U.S. Cl. 131—146 **6 Claims**

1. Process for treating a flow of tobacco leaves wherein the parenchyma is removed from the ligneous parts at a time when at least said ligneous parts of the leaves have a relative humidity of at least 70%, separating the leaf fragments thereby obtained into two homogeneous flows composed respectively of the parenchyma and the ligneous parts and treating separately the parenchyma and the ligneous parts.

4,201,230

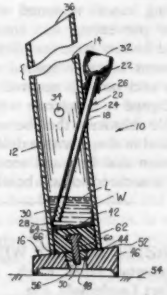
BONG WITH FULL-BORE REMOVABLE PLUG STANDARD

Joseph R. Howell, Jr., 20 Ford Ave., Boonsboro, Md. 21713

Filed Nov. 6, 1978, Ser. No. 958,936

Int. Cl.[2] A24F *1/30*

U.S. Cl. 131—173 **6 Claims**



1. A bong-type smoking pipe, which includes:

a generally upright main tube with a longitudinal bore open at the upper and lower ends thereof,

an auxiliary tube surmounted by a smoking bowl,

the main tube having a sidewall through which said auxiliary tube extends so as to have an inner, lower end disposed within the main tube below a notional cooling and filtering liquid level; and

a base unit, including:

a handwheel member having an internally threaded socket opening through one face thereof and having an opposite face which provides a support surface for standingly supporting the pipe; and

a generally cylindrical plug having a bolt with the head thereof embedded nonrotatively therein and on externally threaded shank thereof projecting therefrom;

said plug being removably force fit in the lower end of said main tube bore, said handwheel internally threaded socket threadably receiving said bolt shank and said handwheel being tightened axially compressing and radially expanding the plug to simultaneously removably plug the lower end of said main tube bore and provide a standard for the pipe.

4,201,231

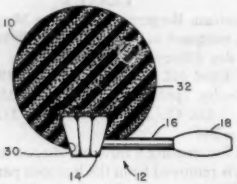
PIPE COVER AND HOLDER

Michael A. Palmer, 815 W. 14th St., Williston, N. Dak. 58801

Filed Nov. 23, 1977, Ser. No. 854,091

Int. Cl.[2] A24F *5/10*

U.S. Cl. 131—176 **8 Claims**



1. In a smoker's pipe having a bowl with an upper open end portion at the entrance to a generally cup-shaped chamber adapted to receive a smokable substance, and having a hollow stem member attached to said bowl for conducting smoke from said bowl to the smoker, the improvement comprising:

a bowl cover for retaining said smokable substance, said bowl cover being a spongy mass of open-celled elastic material, said mass having an opening dimensioned to yieldingly receive a portion of said bowl for releasably securing said portion within said mounting bore;

first retaining means mounted in said opening for preventing said smokable substance from directly contacting said bowl cover; and

second retaining means mounted within said cup-shaped chamber for preventing said smokable substance from entering said hollow stem member, said first and second retaining means being in spaced apart relation to each other when said bowl is secured within said mounting bore and adapted to cooperate with each other to retain said smokable substance therebetween, said spongy mass being spherical in shape with a diameter at least twice the length between said first and second screens when said bowl cover is secured to said bowl.

4,201,232

CIGARETTE HOLDER WITH FILTER

Paul Kaye, Farmington Hills, Mich., assignor to Aquafilter Corporation, Fort Lauderdale, Fla.

Filed Jun. 28, 1978, Ser. No. 919,813

Int. Cl.[2] A24F *13/06*

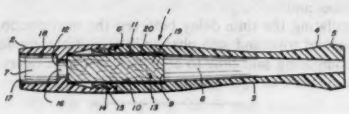
U.S. Cl. 131—187 **5 Claims**

1. A cigarette holder and filter cartridge combination comprising:

a holder assembly including interconnected mouthpiece and cigarette holding sections which when connected define a cylindrical filter cartridge chamber connected at one end to a passage through the mouthpiece section and at the other end to an enlarged cigarette receiving opening at the other end, and

a filter cartridge comprising:

a cylindrical core having a mixture of absorbent and non-absorbent fibers admixed with a water soluble adhesive



and an expandible paper wrapper about the cylindrical surface of said core, said cartridge when dry having a diameter less than the diameter of said chamber and when wet having a diameter equal to the diameter of said chamber.

4,201,233

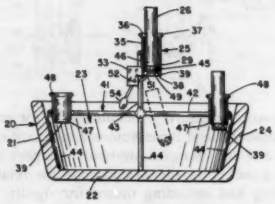
CIGARETTE RETARDING AND SNUFFING DEVICE

Albert L. Jean, 49 Merrimack Ter., Dracut, Mass. 01826

Filed Dec. 22, 1977, Ser. No. 863,227

Int. Cl.[2] A24F *13/18, 19/14*

U.S. Cl. 131—237 **4 Claims**



1. A combined ashtray and cigarette holder comprising

an ash receptacle having a bottom and an upstanding side wall;

an elongated tube having a generally cylinderical wall of predetermined inside diameter slightly greater than the diameter of a cigarette, an outwardly flared open upper end and an open lower end; and

an arm centrally pivoted on said tube proximate the open lower end thereof, said arm having a counter weight at one end, and

said arm having a pin like tip at the other end normally located within the open lower end of said tube and spaced from the wall thereof

said arm tip being selectively movable from cigarette snuffing position within said tube, to cigarette combustion retarding position just below said open lower end to inactive position far removed from said lower end.

4,201,234

FILTER FOR SMOKING ARTICLE, MAINLY CIGARETTE

Serge Neukomm, Antagnes sur Ollon, Switzerland, assignor to Sasmoco, S.A., Lenzerheide, Switzerland

Filed Feb. 21, 1978, Ser. No. 879,625

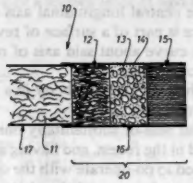
Claims priority, application Switzerland, Feb. 21, 1977, 2116/77

Int. Cl.[2] A24B *15/02*; B01D *25/02, 26/06, 27/02*

U.S. Cl. 131—265 **11 Claims**

1. A tobacco smoke filter comprising: two substantially cylindrically shaped filtering segments each comprised of fibrous material and being spaced apart in the longitudinal direction of the filter to define a cavity therebetween, said

cavity containing a particulate filtering material, said particulate filtering material being composed of a mixture of two different groups of non adhered granules, the average diameter



of said granules of the first said group being 20 to 50 times greater than the average diameter of said granules of the second said group.

4,201,235

AMINO ACID-VITAMIN FORMULATIONS FOR SKIN, HAIR AND SCALP CONDITIONERS

Vitale G. Ciavatta, East Hanover, N.J., assignor to Mare Corporation, Fairfield, N.J.

Filed Jan. 3, 1978, Ser. No. 866,348
Int. Cl.[2] A45D *19/16;* A61K *7/06*
U.S. Cl. 132—7 **20 Claims**

1. A composition for topical application to hair and scalp to enhance softness and luster and impart fuller body to the hair comprising a mixture of amino acids and vitamins in the following proportions given in grams per liter of the final composition:

	Minimum	Maximum
Vitamin B_6	1.80 grams	12.00 grams
Vitamin B_5	1.80	15.00
Vitamin B_3	1.20	7.50
Methionine	0.75	4.00
Arginine	0.54	5.00
Cysteine	1.60	6.20
Phenylalanine	0.45	2.50
Leucine	0.30	2.25
Lysine	0.20	3.00
Glycine	0.28	2.50
Valine	0.10	2.00
Iso-leucine	0.12	2.00
Tryptophane	0.06	1.20
Histidine	0.05	0.50
Tyrosine	0.03	0.20
Threonine	0.40	3.40
Zinc sulfate	2.50	3.00
Vitamin D	100,000.0 I.U.	200,000.0 I.U.
Vitamin A	34,000.0 I.U.	170,000.0 I.U.
Vitamin E	13,050.0 I.U.	43,000.0 I.U.

10. A method of treating hair and scalp to enhance softness and luster and to impart fuller body to the hair comprising the step of topically applying to the hair and scalp, as an active composition, the mixture of amino acids and vitamins according to claim 1.

11. The method of treating hair and scalp according to claim 10, comprising the steps of applying sufficient heat to open the pores of the scalp, topically applying said composition to said hair and scalp, and drying the treated hair and scalp.

4,201,236

HAIR TREATMENT DEVICE

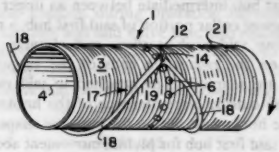
Joe Morefield, 400 Reynolds St., Springhill, La. 71075

Filed Jul. 24, 1978, Ser. No. 927,149
Int. Cl.[2] A45D *2/00*
U.S. Cl. 132—40 **7 Claims**

1. A hair treatment device comprising:

(a) a hollow, split tension roller essentially cylindrical in shape with the split edges of said roller bevelled and normally spaced apart, said roller having a plurality of apertures in the outer surface thereof;

(b) securing means positioned between said tension roller



and the scalp of a user after hair is rolled on said tension roller and said split edges of said roller abut; and

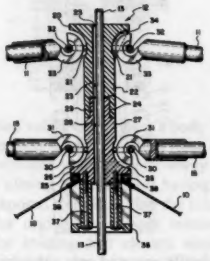
(c) first bias means carried by said securing means and cooperating with one of said apertures for applying tension to said hair.

4,201,237

PIVOTAL FRAME STRUCTURE FOR COLLAPSIBLE UMBRELLA TYPE TENT

Paul J. Watts, 1204 E. 8285 South, Sandy, Utah 84074; Lynn D. Crawford, 3364 Sunnybrooke Dr., Salt Lake City, Utah 84119, and Philip T. Nichols, 3950 Squire Crest Dr., Salt Lake City, Utah 84118

Filed Oct. 10, 1978, Ser. No. 950,029
Int. Cl.[2] A45B *25/08*
U.S. Cl. 135—2 **8 Claims**



1. In a collapsible shelter of the umbrella-tent type wherein the shelter includes a foldable frame and a cover of sheet material affixed to the frame, with said frame comprising an erecting guide; a plurality of support members for supporting said cover when said frame is erected; a first hub mounted on said erecting guide; means for pivotally connecting mutually respective ends of said support members to said first hub, so that when the shelter is erected, the support members extend outwardly and downwardly from said first hub, and when the shelter is collapsed, the support members extend downwardly as a bundle, with the support members being in proximate side-by-side relationship; a second hub mounted on said erecting guide below said first hub, said first and second hubs being adjustable between a collapsed position, in which said first and second hubs are located at the top and bottom of said erecting guide, respectively, and an erected position, in which the first and second hubs are proximate to each other; a plurality of rib members, equal in manner to the number of support members; means for pivotally connecting mutually respective ends of said rib members to the second hub; means for pivotally connecting the other mutually respective ends of said rib members to corresponding support members, such that when the shelter is erected, said rib members extend substantially radially outwardly from said erecting guide, and when the shelter is collapsed, said rib members extend downwardly, substantially

within said bundle of collapsed, support members; the improvement wherein:

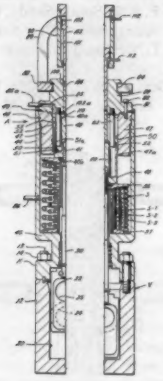
the means for pivotally connecting said support members to said first hub comprises a neck portion in said first hub formed from a concave-shaped, reduced cross section in said first hub intermediate between an upper cap portion and a lower collar portion of said first hub; a ring member encircling said neck portion; and circular, ring-shaped hooks on the respective ends of the support members which are adapted to be attached to said ring member, with the outside circumference of the hooks being such that the hooks nest within the concave shaped neck portion of said first hub for pivotal movement about said ring member which encircles said neck portion.

4,201,238

EMERGENCY OVERRIDE WITH HERMETIC SEAL

Benton F. Baugh, Houston, Tex., assignor to Vetco, Inc., Ventura, Calif.

Filed Mar. 13, 1978, Ser. No. 885,476
Int. Cl.[2] F01B *7/00*; F16K *31/143*
U.S. Cl. 137—68 R **3 Claims**



1. In a hydraulically actuated gate valve including a hydraulic piston slidably mounted in a cylindrical body and connected to a valve stem for moving the stem and a valve gate mounted therewith for opening and closing the valve, the improvement comprising:

(a) a hermetically sealed header secured to the upper end of said cylindrical body having a passage extending therethrough for receiving an override actuator piston for moving said hydraulic piston when its hydraulic piston system fails;

(b) a rupturable hermetic seal means secured in said header passage for closing said passage to provide a hermetic seal to exclude moisture and foreign substances from said hydraulic piston and rupturable by said override actuator piston upon actuation of same.

4,201,239

SEALING DEVICE FOR A VALVE

Masao Kawamura, Tokyo, Japan, assignor to Kitamura Valve Seizo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1978, Ser. No. 879,265
Claims priority, application Japan, Mar. 30, 1977, 52/37721
Int. Cl.[2] F16K *5/06*
U.S. Cl. 137—72 **11 Claims**

1. In a valve which comprises:

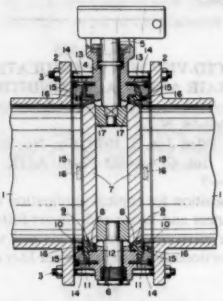
a valve body formed with a cavity and an annular recess which extends around the periphery of the cavity and which has a side recess face and a bottom recess face which joins the wall of the cavity;

and a valve member which is mounted within the cavity so as to rotate about an axis of rotation substantially perpendicular to the central longitudinal axis of the cavity, and whose surface is part of a surface of revolution generated by rotating a curve about said axis of rotation;

a seal device comprising:

a retainer attached to the valve body in a manner to oppose the annular recess therein;

a flexible annular seal of substantially uniform composition partly located in the recess, and having an inner peripheral surface adapted to co-operate with the outer surface of the valve member to form a seal therebetween, and an outer peripheral surface in contact with the side recess face of the recess;



an annular pressure member located between the retainer and the valve body and which has an inner peripheral surface adapted to co-operate with the outer surface of the valve member and a surface facing the valve body adapted to co-operate with the part of the surface of the valve body which it confronts, should the annular seal be destroyed, said annular seal lying partly between said pressure member and said valve body;

and a spring means which is located between the retainer and the pressure member and which urges the pressure member towards the valve body;

said urging being resisted solely by the interposition of said annular seal between said pressure member and said valve body, with the configuration of said seal and pressure member being such that said urging has no effect on the sealing contact between the inner peripheral surface and valve member.

4,201,240

ELECTRONIC LIQUID LEVEL MONITOR AND CONTROLLER

Richard P. Case, Webster City, Iowa, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 21, 1978, Ser. No. 927,156
Int. Cl.[2] F16K *21/16*
U.S. Cl. 137—392 **9 Claims**

1. An electronic liquid level monitor and controller comprising:

a circuit including a passive component;

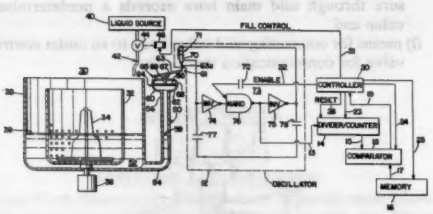
an element associated with the passive component and movable relative thereto, the movement of the element relative to the passive component varying the impedance value of the passive component;

mechanical linking means for moving the element relative to the passive component in proportion to a varying liquid level to be monitored;

means for generating a measured value in a digital format in

proportion to the impedance value of the passive component;

means for storing at least one predetermined digital format value indicative of a known level of said liquid level to be monitored;



means for comparing the measured value to the predetermined value; and

means for providing a control signal when said measured value and said predetermined value, upon being compared, are in a predetermined relationship, the control signal being utilized to regulate the level of the liquid.

4,201,241

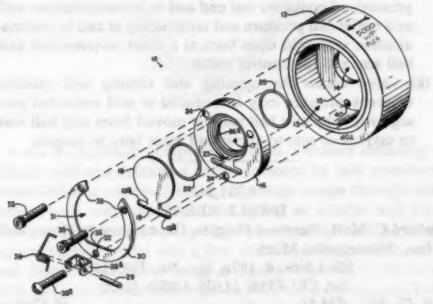
CHECK VALVE WITH REMOVABLE SEAT

William E. Schertler, R.R. 1, Red Level, Ala. 36474

Filed Jun. 29, 1977, Ser. No. 810,927

Int. Cl.² F16K *15/03*

U.S. Cl. 137—527 **6 Claims**



1. A pipeline check valve, comprising:

a. a valve body provided with a recess, said valve body having a flow opening therethrough communicating with said recess;

b. a removable valve seat, said valve seat provided with a fluid opening therethrough, said valve seat corresponding to said recess and being attachable to said valve body within said recess with said flow opening of said body and said fluid opening of said seat aligning to allow fluid flow through said aligned openings;

c. a valving member in operative connection with said valve seat, said valving member being capable of effecting a substantially fluid tight seal with said fluid opening in said valve seat when fluid flows through said opening of said valve seat in a backflow direction; and

d. temporary attachment means for securing said removable valve seat to said valve body, said attachment means comprising:

i. a plurality of openings in said valve seat;

ii. a corresponding plurality of aligning openings in said valve body;

iii. at least one mounting bolt inserted through said aligned openings connecting said valve seat with said valve body; and

iv. a retainer member being entirely attached during operation to said removable valve seat on the downstream face side thereof, with said valving member occupying a pivotal position during operation between said retainer member and said valve seat, said retainer providing a plurality of openings corresponding to and aligning during operation with said plurality of openings provided in said valve body and through said valve seat.

4,201,242

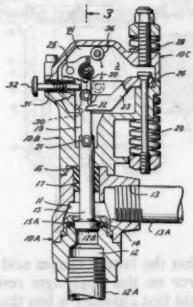
PRESSURE RELIEF VALVE

John N. Troxell, Jr., Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 13, 1978, Ser. No. 914,997

Int. Cl.² F16K *15/00*

U.S. Cl. 137—531 **8 Claims**



1. A pressure relief valve, comprising a body having a flowway therein with an inlet to and an outlet from the flowway, a closure member movable within the flowway between positions opening and closing the inlet and having a pressure responsive surface exposed to fluid within the inlet in the closed position thereof for urging the closure member to its open position, means for holding said closure member in closed position until fluid within the inlet reaches a predetermined pressure level and then releasing said closure member for movement to open position, additional means for automatically returning the closure member to closed position independently of the holding means, including a part mounted on the body for movement between a first position which permits the closure member to move to open position and a second position which moves the closure member from open to closed position, and means for moving said part to its first position in response to fluid pressure within the inlet which is less than the predetermined level required to open the closure member, and for moving said part to its second position, in response to a predetermined low pressure level of fluid within the flowway.

4,201,243

CHECK VALVES

Benjamin Martin, Kirkburton, England, assignor to The Drum Engineering Company Limited, Bradford, England

Filed Dec. 15, 1978, Ser. No. 969,704

Int. Cl.² F16K *31/12*

U.S. Cl. 137—510 **8 Claims**

1. A check valve for connection between a source pressure medium and a pressure medium reservoir to allow passage of pressure medium from said source to the reservoir but to prevent reverse flow from the reservoir to the source, the check valve comprising:

(1) a housing defining a first chamber;

(2) an inlet coupling on the housing for connection to the

source of pressure medium; said inlet coupling being in direct communication with said first chamber;

(3) an outlet coupling on the housing for connection to the reservoir;

(4) first and second valve means disposed in series in the housing;

(5) the upstream valve means, considered in the direction of forward flow from the inlet to outlet, including:

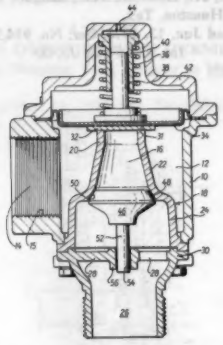
(a) flow tube means disposed in said first chamber;

(b) a first valve seat formed on one end of said flow tube means;

(c) a diaphragm closing one end of said first chamber;

(b) a first closure member carried by said diaphragm;

(e) spring means biassing the diaphragm and first closure



member so that the latter engages said first valve seat when the force on the diaphragm resulting from the pressure in said first chamber is less than the combined force on the diaphragm resulting from said spring biassing means and the pressure in said flow tube means downstream of the said first valve seat; and

(6) the downstream valve means including:

(f) a second valve seat formed internally of said flow tube means downstream of said one end; and

(g) a second closure member disposed in said flow tube means downstream of said second valve seat such that it is held in a closed position in which it engages said second valve seat only when the pressure downstream of the second valve seat is higher than the pressure in said first chamber.

4,201,244

AUXILIARY SAFETY VALVE FOR A PRESSURIZED FLUID SYSTEM

Leo Quirk, Box 84, Mountain Iron, Minn. 55768

Filed Aug. 3, 1978, Ser. No. 930,708

Int. Cl.[2] F16K *15/18, 15/04*

U.S. Cl. 137—614.2 **1 Claim**

1. An auxiliary safety valve for interposition in a pressurized container system comprising:

(a) a cylindrical valve body,

(b) means for connecting said valve body to the outlet end of a pressurized container for communication therewith,

(c) said valve body having a main bore extending therethrough adapted to align with the outlet end of a pressurized container and in communication with said outlet end pressure,

(d) said valve body having an auxiliary bore formed therein at an acute angle to said main bore and in communication with said outlet end pressure and joining with said main bore and in communication therewith,

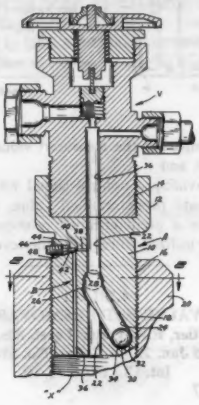
(e) a ball seat formed substantially where said auxiliary bore joins said main bore,

(f) said auxiliary bore having a valve seat formed therein,

(g) said valve seat having a restricted passage restricted in size relative to the size of the auxiallary bore formed therein and in communication with said outlet end pressure,

(h) a ball mounted in said auxiliary bore for movement therein and to said ball seat to close off said main bore due to pressure through said restricted passage when the pressure through said main bore exceeds a predetermined value and

(i) means for connecting said valve body to an outlet control valve for communication therewith,



(j) said valve body having a conduit extending from the pressurized container out end and in communication with said outlet end pressure and terminating at and in communication with said main bore at a point intermediate said ball seat and the control valve

(k) valve means for opening and closing said conduit whereby pressure may be reduced in said restricted passage whereby said ball may be moved from said ball seat to said valve seat to allow said main bore to reopen.

4,201,245

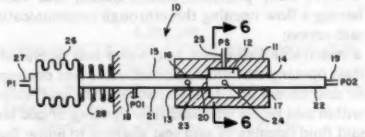
DWELL RELAY

Richard C. Mott, Harwood Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 4, 1976, Ser. No. 738,816

Int. Cl.[2] F16K *11/06;* G05D *16/00*

U.S. Cl. 137—624.11 **15 Claims**



1. A dwell relay comprising:

input means for supplying an input;

supply means for the supply of a supply pressure;

first output means for the supply of a first output pressure;

second output means for the supply of a second output pressure; and,

first means for connecting said supply means to said first output means and second means for connecting said supply means to said second output means, said first and second means connected to said input means whereby as said input increases said first output pressure increases from a first reference level to a second reference level and, upon a further increase in said input, said second output

pressure decreases from a third reference level to a fourth reference level, wherein said increase of said first output pressure is separated by a dwell period from said decrease of said second output pressure.

4,201,246

PRESSURE ACCUMULATOR

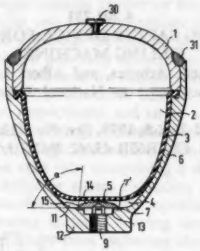
Alfred Wirth, Schweinfurt; Hans Reimer, Waigolshausen; Klaus Mackert, Schweinfurt; Franz Diehl, Schwanfeld, and Klaus Splett, Schonungen, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,400

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1977, 2738684

Int. Cl.² F16L *55/00*

U.S. Cl. 138—30 26 Claims



1. An accumulator comprising: a rigid container including a bottom wall and defining a cavity enclosed by said container; means defining continuously-open passage means through said bottom wall, said bottom wall including an annular wall portion contiguous with said passage means; a resilient partition separating said cavity into a first and a second compartment, said first compartment being in direct flow communication with said continuously-open passage means; a pressurized fluid within said second compartment effective to cause expansion of said resilient partition to bring said resilient partition to abutting engagement with said bottom wall over said continuously-open passage means when fluid pressure in said first compartment is below a predetermined level; and shielding means rigidly fastened with said container and exposed within said first compartment to abutting engagement with said resilient partition for preventing said resilient partition from being drawn into said continuously-open passage means; said shielding means comprising a continuous frontal surface formed with a generally smooth uninterrupted configuration exposed within said first compartment and oriented to generally face toward said second compartment, means defining an annular rim surface located adjacent and spaced from said annular wall portion of said bottom wall, said annular rim surface and said annular wall portion being arranged to define an annular space bounded by said annular rim surface and said annular wall portion together with said resilient partition when said partition is in abutting engagement with said shielding means, and means defining a continuously-open orifice maintaining said annular space in flow communication with said continuously-open passage means.

4,201,247

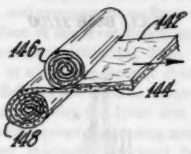
FIBROUS PRODUCT AND METHOD AND APPARATUS FOR PRODUCING SAME

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 29, 1977, Ser. No. 811,234

Int. Cl.² D04H *1/58;* B32B *5/06, 5/22, 17/00*

U.S. Cl. 138—141 12 Claims



1. A fibrous product comprising a body of crystallizable mineral fibers and a body of amorphous glass fibers adhered by a resinous binder to the body of mineral fibers.

4,201,248

PROCESS AND APPARATUS FOR SINGLE-FILLING MANUFACTURE OF DOUBLE-NAP FABRICS

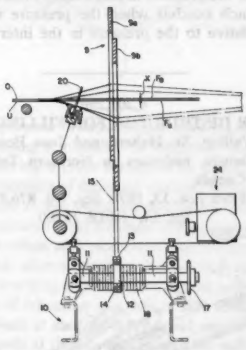
Philippe Delaplace, and Pierre Bernard, both of Amiens, France, assignors to Lindauer Dornier Gesellschaft mbH, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,579

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744795

Int. Cl.² D03D *39/16*

U.S. Cl. 139—21 11 Claims



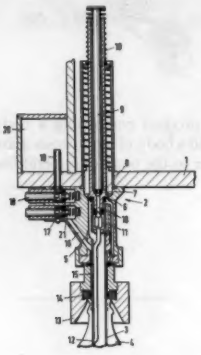
1. In the method for the single-filling manufacture of double nap fabrics, wherein the filling yarn for the face and back fabrics is inserted at the same place into the shed,

the improvement comprising superposing an additional lifting motion to the normal motion emanating from a dobby at least for shafts forming the shed of the warp for one of the two fabrics.

4,201,249
MACHINE FOR THE FILLING OF LIQUIDS INTO CONTAINERS

Wolfgang Borstelmann, Dortmund, Fed. Rep. of Germany, assignor to Holstein und Kappert GmbH, Dortmund-Wambel, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 913,867, Jun. 8, 1978, Pat. No. 4,146,065. This application Oct. 10, 1978, Ser. No. 949,471
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1977, 2745641
Int. Cl.[2] B65B *31/00*
U.S. Cl. 141—39 **7 Claims**

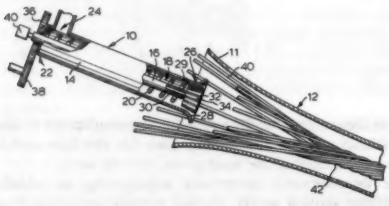


1. A filling machine for filling of liquids into a container, such as a bottle or the like, comprising a liquid vessel; filling elements operatively connected with said liquid vessel and including a liquid input conduit, an advance and return gas conduit, and a pressure relief conduit communicating the interior of the container with the outer atmosphere; means for establishing a pressure difference between the interior of the container and the interior of said liquid vessel, said establishing means including a channel adapted to be maintained at a pressure which is lower than that in said liquid vessel and higher than that of the outer atmosphere, and a branch conduit communicating the interior of the container with the interior of said channel; and means for automatically closing said branch conduit when the pressure in said channel increases and opening said branch conduit when the pressure in said channel decreases relative to the pressure in the interior of the container.

4,201,250
POWDER DISTRIBUTOR FOR FILLING A CABLE

Jörg-Hein Walling, St. Hubert, and Jean Bouffard, Lachine, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 13, 1978, Ser. No. 876,873
Int. Cl.[2] H01B *19/00*
U.S. Cl. 141—250 **7 Claims**



1. A device for filling the interstices of a multi-stranded electric cable with powder in which a plurality of strands are fed into a closing die having an outwardly flaring inlet wall, a device comprising:

a cylindrical housing;

a tube concentric with the housing and spaced inwardly therefrom to form with the housing an annular chamber having an outlet end, and an aperture opening into the chamber for feeding powder thereto;

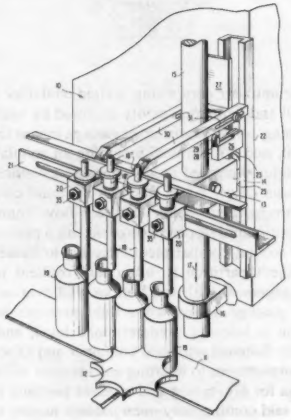
a helical screw concentrically mounted within the chamber and means to rotate the screw oxially whereby powder is moved along the chamber from the aperture to the outlet end thereof; and

a drive shaft passing axially through the tube and having an impeller coaxially mounted at the end thereof, the impeller being located at the outlet end of the chamber, and means to rotate the drive shaft axially and independently of movement of the screw whereby powder moved along the chamber is dispersed laterally from the outlet end thereof, the outlet end of the chamber being locatable within the inlet wall of the closing die and spaced therefrom.

4,201,251
ANTI-SPILLING SAFETY DEVICE FOR HIGH-SPEED FILLING MACHINES

Richard N. Bennett, Arbutus, and Albert Lichaa, Baltimore, both of Md., assignors to National Instrument Co., Inc., Baltimore, Md.

Filed Jun. 5, 1978, Ser. No. 912,317
Int. Cl.[2] B65B *43/42*; B67C *3/20*
U.S. Cl. 141—284 **8 Claims**

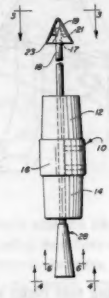


1. An anti-spill safety mechanism for high-speed filling machines, comprising reciprocable nozzle means supported by nozzle holder means forming part of a nozzle support structure operable to move in the downward and upward direction in predetermined timed relationship to the cycle of operation of the filling machine, characterized in that a respective nozzle means is releasably held relative to its nozzle holder means, and safety means responsive to relative movement between the nozzle means and the nozzle holder means when the nozzle means encounters an obstruction in its movement in the direction toward a respective container to be filled, to stop the operation of the filling machine and thereby prevent spilling.

4,201,252
NON-CLOGGING GRAVITY TRANSFER CONNECTOR FOR CLOSED CONTAINERS

Eugene M. Noel, 1215 S. Portofino Dr., Sarasota, Fla. 33581

Continuation-in-part of Ser. No. 824,333, Aug. 15, 1977, abandoned. This application Aug. 10, 1978, Ser. No. 932,445
Int. Cl.[2] B65B 3/06
U.S. Cl. 141—286 3 Claims

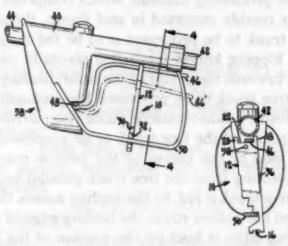


1. In a viscous liquid transfer connector for gravity transfer of such material from one closed container having an outlet opening to another container having an inlet opening, said connector comprising a generally tubular body having upper and lower end portions formed for stopper-like insertion in the outlet opening of said one container and the inlet opening of the other container, respectively, and an air vent tube having upper and lower end openings mounted within said body to extend axially therethrough and beyond each end therefo, the improvement in the vent tube comprising a downwardly and outwardly flared deflector means extending from the lower end of the vent tube for widening the opening into the same and thereby preventing material flowing through said body and around said vent tube from gathering about and clogging the lower end opening of said tube and preventing the free flow of air thereinto from said other container, and an inverted cup-like cap mounted on the upper end of said vent tube and having a downward and outward divergence relative to the axis of the tube to position the end opening of the cap below the upper end opening of the tube.

4,201,253
GAS PUMP LEVER BLOCKING MEMBER

Michael J. Maloney, 4800 Oxborough La., Minneapolis, Minn. 55437

Filed Aug. 25, 1978, Ser. No. 936,899
Int. Cl.[2] B65B 1/04, 3/00; B67C 3/00
U.S. Cl. 141—392 2 Claims



1. A gas pump lever blocking member for use with a gas pump having a nozzle, a valve for regulating gas flow through the nozzle, a manually operable lever arm to open the valve, means for biasing the lever arm in a position whereby the valve is normally closed, and a lever arm guard disposed about the leverarm, comprising:

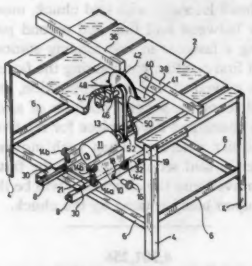
(a) an elongated member having an elongation axis, first and second ends disposed along said elongation axis, and opposite side portions, one of said side portions having a plurality of notches formed therein and spaced apart along said elongation axis, each of said notches defining engagement surfaces facing generally toward said second end of said member, said engagement surfaces disposed to engage the inner surface of the lever guard; and

(b) a pair of members projecting from said first end and spaced apart at a distance greater than the width of the lever arm to define a slot sized to receive the valve actuating lever arm whereby the lever arm is held in a valve opening position against the biasing means with said elongated member releasably engaged between the lever guard and the lever arm with said first end of said elongated member engaging the lever arm at a point spaced apart from the end of the lever arm.

4,201,254
MULTIPLE PURPOSE WOODWORKING STRUCTURE

Mustafa Fehric, c/o Douglas S. Johnson, 133 Richmond St. West, Toronto, Ontario, Canada (M5H 2L7)

Filed Jun. 9, 1978, Ser. No. 914,039
Int. Cl.[2] B27C 9/00
U.S. Cl. 144—1 G 5 Claims



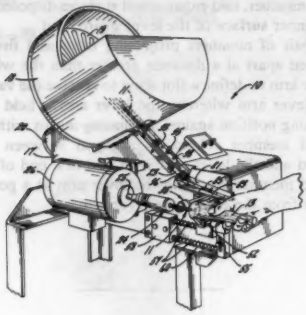
1. A multiple purpose woodworking table having a single motor for performing a plurality of different woodworking operations and having a table surface with a single working area where said plurality of different woodworking operations are performed, said motor being located below the table surface and being rotatable from a locked horizontal position to a locked vertical position and vice-versa, said motor having an output shaft which when said motor is rotated, is moved away from said single working area, a motor mount supporting said motor, a first set of wheels at one side of said motor mount, a second set of wheels at another side of said motor mount and a third set of wheels at the corners joining the sides, a pair of opposing channel members for rollingly securing said sets of wheels, said channel members including spaced cut-out portions positioned to permit releasing of said first set of wheels from said channel members while fitting said second set of wheels into said channel members and vice versa as said motor and its mount are rotated, said channel members providing a runway for said sets of wheels when fitted therein; and locking means for securing said motor and mount in both the horizontal and vertical working position.

4,201,255

MACHINE FOR THREADING FASTENERS INTO WORKPIECES

Joseph W. Donnelli, and Richard D. Barnes, both of Rockford, Ill., assignors to Southern Imperial, Inc., Tupelo, Mich.

Filed Nov. 6, 1978, Ser. No. 958,036
Int. Cl.[2] B25B *23/10*
U.S. Cl. 144—32 R **17 Claims**



1. A machine for driving elongated threaded fasteners into workpieces, said machine comprising a support, means on said support for storing a supply of fasteners and for delivering the fasteners one at a time to a loading station, a power-rotated chuck mounted on said support and adapted to grip a fastener and to rotate the fastener about its own axis, the improvement in said machine comprising, a holder mounted on said support to move laterally between a first position in which the holder is located in said loading station and a second position in which the holder is alined laterally with said chuck, means for moving said holder between said first and second positions, said holder receiving a fastener in said loading station when said holder is in said first position and moving the fastener laterally as the holder is moved to said second position, and means on said support adjacent the second position of said holder for supporting said chuck and a workpiece for relative movement toward one another whereby, when such movement occurs with said holder in said second position, the fastener on the holder will be moved into the chuck and will be threaded into the workpiece upon being rotated by the chuck.

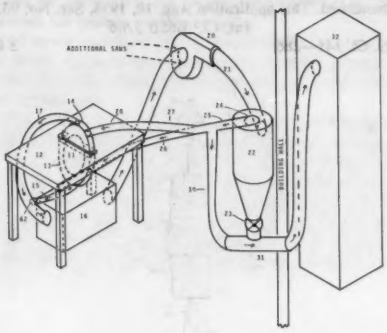
4,201,256

SAWDUST COLLECTOR

Andrew Truhan, P.O. Box 467, Granite Falls, N.C. 28630

Filed Jan. 10, 1979, Ser. No. 2,464
Int. Cl.[2] B27G *19/00*; B26D *7/22*; B01D *50/00*
U.S. Cl. 144—252 A **5 Claims**

1. A dust collecting apparatus for a cutting tool, comprising:
a chip and dust separator;
chip and dust inlet means for said chip and dust separator;
gas and dust outlet means for said chip and dust separator;
a cutting tool safety cover including a vacuum duct and positioned adjacent the cutting area of said cutting tool;
a vacuum conveyor duct connecting said cutting tool safety cover and said vacuum duct to said inlet means to said chip and dust separator;
a fan;
a vacuum conveyor conduit means coupling said gas and dust outlet means of said chip and dust separator to the input of said fan;
a cyclone separator including an inlet, a clean air outlet, and a particle discharge chute;
a pneumatic conveyor conduit coupling the output of said fan to said input of said cyclone separator;
a dust storage container;
clean air conduit means connected to said clean air outlet and to said cover and said vacuum duct;
a first conduit coupling said particle discharge chute to said dust storage container;



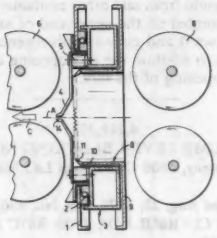
a second conduit coupling said clean air conduit means to said first conduit whereby the particles from said particle discharge chute and a portion of the air in said clean air conduit means from said clean air outlet are mixed to form a fluid suspension.

4,201,257

TIMBER PROCESSING MACHINE

Antti T. Valo, P.O. Box 29, 08100 Lohja 10, Finland

Filed Jan. 24, 1978, Ser. No. 871,905
Claims priority, application Finland, Mar. 18, 1977, 770860
Int. Cl.[2] B27L *1/00*
U.S. Cl. 144—208 E **7 Claims**



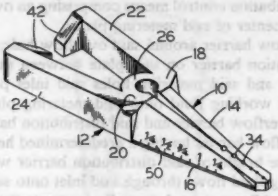
1. A timber processing machine which comprises a frame, a hollow rotor rotably mounted in said frame, through which rotor a tree trunk to be processed is to be fed longitudinally, barking and lopping knives journalled pivotally on the rotor and directed towards the center of the rotor, feeding means for feeding the tree trunk to be processed longitudinally through the hollow rotor, a non-rotatable guide ring surrounding the path of movement of the tree trunk to be processed arranged on the inlet side of the knives of the hollow rotor to bend branches projecting from the tree trunk parallel with the tree trunk as the tree trunk is fed, by the feeding means, through the guide ring and the hollow rotor, the leading edge of each knife being a cutting edge at least on the portion of the blade that extends radially inside the guide ring, and wherein the circumferential edge of the guide ring adjacent the knives is provided with at least one tooth which projects diagonally in the direction of feed of the tree trunk, inwardly toward the rotor axis and in opposition to the direction of rotation of the rotor.

4,201,258

NAIL HOLDER

I. James Elmore, Simsbury, and Robert F. West, West Simsbury, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Jan. 22, 1979, Ser. No. 5,440
Int. Cl.[2] B25C 3/00
U.S. Cl. 145—46 9 Claims



1. A holder for nails and the like comprising:

A. a pair of operating members each including an elongated jaw portion, a handle portion, and a pivot portion intermediate said jaw and handle portions; and

B. pivot means connecting said operating members at said pivot portions thereof and normally biasing said jaw portions into contact with each other in the normal condition of said holder, said handle portions being spaced apart in said normal condition and being movable towards each other to open said jaw portions against the biasing pressure of said pivot means, said jaw portions having top faces, bottom faces, opposed generally vertically extending inner side faces and inclined outer side faces tapering from said top faces outwardly from said inner side faces to adjacent said bottom faces to define a reduced cross section at said top faces and a broad cross section adjacent said bottom faces, said bottom faces of said jaw portions lying in a common plane with the lowest surfaces of said handle portions whereby said holder may be stably positioned upon a work surface, the inner side faces of said jaw portions being adapted to retain a nail or the like therebetween with the head thereof projecting outwardly of said top faces to facilitate striking of the associated nail by a hammer or the like, the outer side face of at least one of said jaw portions having measuring indicia spaced along at least a portion of the length thereof.

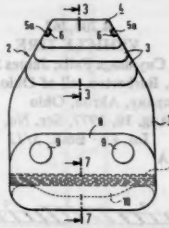
4,201,259

SECURITY POUCH TO BE CLIPPED TO ARTICLES OF CLOTHING

Franz Alsdorf, Amalienstrasse 28, 8000 Münich 40, Fed. Rep. of Germany

Filed Nov. 9, 1978, Ser. No. 959,380
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1978, 2808348
Int. Cl.[2] A45C 13/18, 13/20
U.S. Cl. 150—47 13 Claims

1. A security pouch for attachment to an article of clothing and for the receipt of articles, especially money, cards and the like, comprising a slim flexible container portion and a resilient clip member fastened thereto and capable of being brought grippingly into engagement with an article of clothing, said clip member comprising an inner member with a substantially hook-shaped cross-section and an outer member which resiliently encloses the inner member and which has a cross-section shaped to exert a compressive force on the inner member.

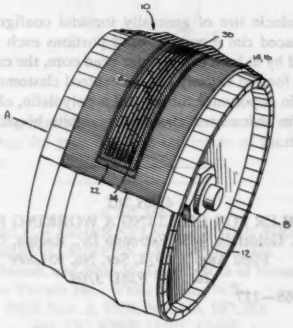


4,201,260

METHOD FOR MAKING A RADIAL PLY TIRE IN A SINGLE BUILDING STAGE

Henri J. Mirtain, Compiegne, France; Daniel Shichman, Trumbull, Conn., and James J. Neville, Newfoundland, N.J., assignors to Uniroyal, Inc., New York, N.Y. and Uniroyal a Societe Anonyme, Clairoix, France

Continuation-in-part of Ser. No. 684,415, May 7, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 840,863
Int. Cl.[2] B60C 9/22
U.S. Cl. 152—361 DM 24 Claims



19. A single stage built radial ply tire having sidewalls, beads and a tread, said tire comprising:

(a) a bead-anchored toroidally shaped carcass composed of a body layer including at least one body ply of cord fabric defining sidewall regions and a crown region, with all of the cords in said body layer extending from bead to bead and in substantially radial planes relative to said beads and the axis of said body layer;

(b) a breaker layer positioned circumferentially about said body layer in said crown region of the latter, said breaker layer including a multiplicity of breaker plies of bias angled cord fabric, the cords of said breaker layer being parallel in each ply and oppositely disposed in adjacent plies and forming in each ply a bias angle of between at least about 35° and not more than about 60° with the mid-circumferential plane of said carcass; and

(c) a cap band positioned circumferentially about said breaker layer intermediate the same and the tread, said cap band being constituted by a small number of reinforcing cords extending in helical screw thread fashion around the radially outer surface of said breaker layer for at least a selected plurality of full turns, with said reinforcing cords of said cap band being oriented at a substantially 0° bias

angle relative to said mid-circumferential plane of said carcass and tightly embracing said breaker layer.

4,201,261
VEHICLE TIRE

Donald R. Bartley, Cuyahoga Falls; James Sidles, Richfield, and Stephen C. Sabo, Barberton, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

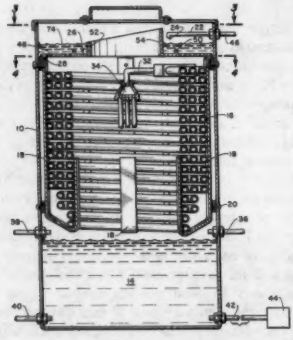
Filed Aug. 10, 1977, Ser. No. 823,304
Int. Cl.[2] B60C 5/12
U.S. Cl. 152—357 A **6 Claims**

1. A vehicle tire of generally toroidal configuration with axially spaced rim mounting bead portions each individually reinforced by at least one annular bead core, the carcass of the tire being formed entirely of a vulcanized elastomer blend of a monoolefin copolymer rubber and a polyolefin, characterized in that the vulcanized elastomer exhibits biaxial molecular orientation.

4,201,262
COOLER FOR CHILLING A WORKING FLUID

Stanley A. Goldstein, 4458 Estrondo Dr., Encino, Calif. 91631

Filed Aug. 7, 1978, Ser. No. 931,599
Int. Cl.[2] F28D 3/04
U.S. Cl. 165—117 **14 Claims**

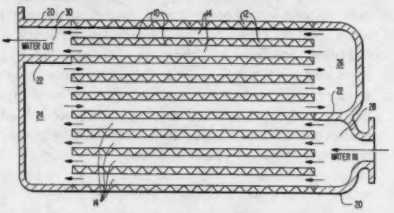


1. A cooler for extracting heat from a working fluid comprising:
a tank;
a reservoir at the bottom of said tank;
a plurality of cooling coils mounted in said tank;
an inlet for delivering a working fluid to be cooled in said tank;
metering means for metering the flow of working fluid over said cooling coils;
said metering means comprising a circular plate having a plurality of metering holes aligned with the respective coils in said plurality of cooling coils;
distribution control means for controlling the distribution of working fluid evenly over said metering plate;
said distribution control means comprising an overflow hole in the center of said metering plate;
an overflow barrier around said overflow hole;
a distribution barrier on said plate between said overflow barrier and said metering holes said inlet positioned to deliver working fluid onto said metering plate between said overflow barrier and said distribution barrier;
said overflow barrier having a predetermined height greater than the height of said distribution barrier whereby said working fluid flows through said inlet onto said metering plate and flows at a substantially even rate through all the metering holes.

4,201,263
REFRIGERANT EVAPORATOR

James H. Anderson, 2422 S. Queen St., York, Pa. 17402

Filed Sep. 19, 1978, Ser. No. 943,711
Int. Cl.[2] F28F 9/22
U.S. Cl. 165—146 **3 Claims**



1. An evaporator comprising a casing having a plurality of plates arranged in pairs in vertical planes and in spaced parallel relation to one another, each pair of plates defining a passageway and each pair of plates defining a passage between adjacent pairs of plates for the passage of water, a refrigerant consisting of a boiling fluid at a constant temperature flowing through said passageways in a crossflow path to said passages, said casing having inlet and outlet water openings therein defined by internal abutments, said abutments engaging certain of said plates and forming a sinuous path for the water moving through said passages from said inlet to said outlet with the initial series of water passages being greater in number than the next series which is in turn greater in number than the next series that communicates with the outlet opening.

4,201,264
SOLAR WATER TANK

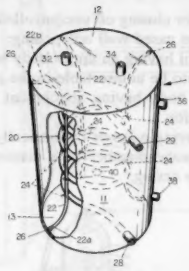
Michael H. Platt, Corning, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 31, 1978, Ser. No. 929,864
Int. Cl.[2] F28F 9/00
U.S. Cl. 165—162 **8 Claims**

1. A liquid heat exchange tank having a continuous sidewall and top and bottom head walls fastened together to define a fluid type chamber, an inlet through one of said walls, an outlet through one of said walls, and a continuous heat exchanger coil of tubing disposed inside said chamber, the tubing thereof being connected outside of said chamber through said inlet and outlet, respectively, adapted for circulation of a fluid media

through said coil of tubing, the improvement therein comprising

plural legs inside the said chamber for bracing the heat exchanger coil and supporting it against excessive movement in said chamber, said legs being flared outwardly near their opposite ends and their opposite ends engaging the interior of the tank adjacent a juncture point between



the sidewall and said top head wall and said bottom head wall, and

means for fastening each of said plural legs to the heat exchanger coil at locations that are spaced from each other, whereby the said heat exchanger coil is provided with longitudinal and transverse support inside the tank independent of the inlet, outlet connections of the coil along the tank walls.

4,201,265

SIDEPOCKET MANDREL AND METHOD OF MAKING

James M. Thomason, and Francis D. Logan, both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.

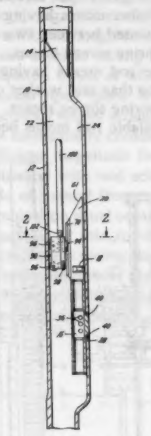
Filed Jan. 11, 1979, Ser. No. 2,528

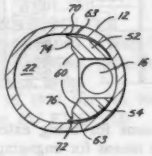
Int. Cl.[2] E21B *7/06*

U.S. Cl. 166—117.5 **6 Claims**

1. In a sidepocket mandrel for use in a well tubing having a hollow body having an inside with an open bore extending therethrough and an offset bore, said body having an opening in communication with the offset bore, a valve pocket positioned inside the body and beside the body opening for receiving flow control devices, a deflector guide positioned in the offset bore above and connected to the pocket and having a pair of rails having longitudinal outer edges with a gap between the outer edges and the inside of the body and forming a guide path therebetween for allowing the entrance of flow control devices into said pocket but preventing the entrance of open bore tools into the guide path, a locking lug secured to the deflector guide, and an orienting sleeve positioned in the open bore, the improvement comprising,

the longitudinal outer edges of each of said rails adjacent the open bore having a deformable lip protruding outwardly from said rail,





said lips being bent outwardly towards the inside of the body for closing the gaps between the inside of the body and said rails.

4,201,266

ROTATABLE WASHER SELF-CLEANING HELICAL SPRING SCREEN AND METHODS

Reynaldo Calderon, and Billy H. Towell, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 2, 1978, Ser. No. 957,253

Int. Cl.[2] E21B *37/02, 43/08*

U.S. Cl. 166—231 **13 Claims**

1. A method for assembling a self-cleaning helical spring screen that will simultaneously clean itself of foreign material between the coils of the helical spring screen in a well while producing filtered liquid from the well comprising the steps of,

(a) fixedly mounting a helical spring screen between both ends of a perforated screen housing,

(b) inserting a first cleaning washer means with a large opening therein between two coils at a first end of the helical spring screen, and

(c) rotatably mounting a controllable rod means of a substantially smaller circumference than the washer opening on top of the perforated screen housing for movement into the helical spring screen for connecting with the first cleaning washer means for rotating the cleaning washer means between the coils to a second end of the helical spring screen for cleaning the foreign material from between the coils and for simultaneously producing filtered liquid through the cleaning washer means large opening while sliding over the rod from the first end of the helical spring screen to its second end.

7. A self-cleaning helical spring screen for being cleaned of foreign material from between the coils of the spring screen in

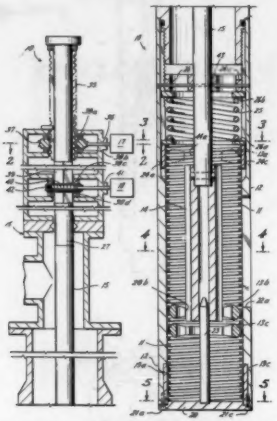
a well while simultaneously producing filtered liquid from the well comprising,

(a) helical spring screen means secured at its first and second ends in an elongated open screen housing,

(b) cleaning washer means having a large opening therein rotatably mounted between two coils at said first end of the helical spring screen means,

(c) controllable rod means having a substantially smaller circumference than said washer opening for moving into said helical spring screen means,

(d) said controllable rod means being responsive to a rod



extendible means for being extended into said helical spring screen means for engaging said cleaning washer means, and

(e) said controllable rod means being responsive to a rod rotating means for rotating said cleaning washer means between the coils from said first end to said second end of said helical spring screen means for cleaning the foreign material from between the coils and for simultaneously producing filtered liquid through said cleaning washer means large opening while sliding over the rod means from said first end of said helical spring screen means to its second end.

4,201,267

WILD WELL CONTROL METHOD AND APPARATUS

Louis H. Ramhorst, 538 W. McKinley, Blackwell, Okla. 74631

Filed Nov. 13, 1978, Ser. No. 959,690

Int. Cl.[2] E21B *33/03*

U.S. Cl. 166—315 **7 Claims**

1. A method for controlling uncontrolled fluid flow from an open cased well comprising:

(a) inserting a probe tool having an elongated lower cylindrical probe member slideably fitable inside the casing (the member having a seal circumscribing its diameter and a valve about its upper end) into the end of the casing such that the flow is shut off,

(b) fastening the valve to the end of the casing,

(c) withdrawing the probe, and

(d) shutting off the valve;

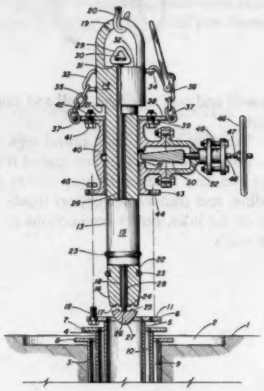
wherein the probe tool has an upper body member of sufficient diameter as to be uninsertable in the casing, wherein the upper body has attachment means for a lifting means therefor, wherein the probe member seal is about the lower circumference of the probe member and is adapted to provide a seal between the interior circumference of the probe member and the casing, and wherein the valve about the upper end of the probe member is situated about the seal and is adapted to be sealably fastenable to the upper end of the casing; wherein the probe tool has a bore along its vertical axis, a flattened shoulder at its lower end, a stem valve situated in the bore having an upper lifting attachment means, an elongated vertical stem, and a lower valve head sealable upon upward urging against the flattened shoulder at the lower end of the probe tool, the closed valve head and lower end of the probe tool defining a bullet shape; and wherein the upper body of the probe tool has attachment means for attaching a lifting mechanism adaptable for lifting a detachable valve carrier attached to the upper end of the valve.

3. Apparatus for closing off uncontrolled fluid flow from the casing of an open cased well comprising:

(a) a probe tool having an upper body member of sufficient diameter as to be uninsertable in the casing;

(b) the upper body having attachment means for a lifting means therefor,

(c) the tool having a lower cylindrically shaped, vertically elongated probe member of a diameter to be slideably fitable in the casing;



(d) the probe member having a sealing means situated about the lower circumference thereof, the sealing means adapted to provide a seal between the interior circumference of the casing and the exterior lower circumference of the probe means;

(e) situated about the upper portion of the probe member above the sealing means, a valve means having an open bore slideably fitable about the probe member and adapted to be sealably fitable to the upper end of the casing; wherein

the probe tool has a bore along its vertical axis, a flattened shoulder at its lower end, a stem valve situated in the bore having an upper lifting attachment means, an elongated vertical stem, and a lower valve head sealable upon upward urging against the flattened shoulder at the lower end of the probe tool, the closed valve head and lower end of the probe tool defining a bullet shape.

4,201,268

ADJUSTMENT MECHANISM FOR DOZER BLADE

Claude M. Frisbee, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

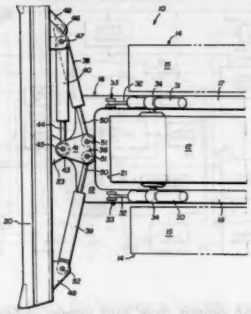
Filed Oct. 23, 1978, Ser. No. 953,827

Int. Cl.[2] E02F *3/76*

U.S. Cl. 172—804 **12 Claims**

11. In an earth-working vehicle, a frame comprising a generally C-shaped structure having opposed arms, the free ends of said arms being connected to said vehicle, the other ends of said arms being connected by a transverse cross beam, a ground engaging blade, means for universally mounting said blade on the forward end of said transverse cross beam, the improvement comprising:

a vertical mast upstanding from said transverse cross beam, an angling and pitching control for said blade including a pair of extensible and retractable piston-cylinders pivotally connected at one of their ends to said vertical mast at approximately mid-way of its longitudinal extent and their



opposed ends pivotally connected to respective sides of said blade,

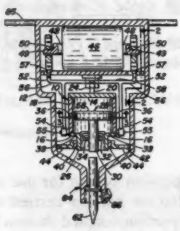
said vertical mast being generally "f" shaped and the pivotal axes on said vertical structure for said pair of piston-cylinders are rearwardly of said blade universal mounting means.

4,201,269

IMPACT DEVICE WITH LINEAR SINGLE ACTING AIR SPRING

Frederick W. Ross, 755 Klamath Dr., Del Mar, Calif. 92014

Division of Ser. No. 762,003, Jan. 24, 1977, Pat. No. 4,099,580.
This application Apr. 6, 1978, Ser. No. 894,093
The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.
Int. Cl.[2] E25B *15/00*
U.S. Cl. 173—1 **5 Claims**



1. The method of operating an impacting device of the type wherein a rotating crankshaft having at least one crank thereon actuates resilient coupler means mounted on a frame to drive ram means into impacting motion against impact tool means upon each rotation of the crankshaft, and the resilient coupler means comprises a single acting air spring including a vented cylinder mounted for reciprocation in the frame upon rotation of the crankshaft an end element enclosing only one end of the cylinder, and the ram means including a piston slidably mounted in the cylinder and arranged to close the vent and enclose an internal open space of variable volume in the cylinder upon each rotation of the crankshaft, wherein th method comprises:

for a selected frequency w_o of crankshaft rotation and a selected mass m of said ram means; providing a sufficiently short crank length and, in combination therewith, selecting the piston with sufficient cross-sectional area A normal to the path of piston motion and arranging the cylinder and vent location to enclose a substantially constant quantity of air of volume Ah at pressure p_i upon each enclosure of the internal open space by the piston during each cycle of crankshaft rotation to determine a ratio p_iA/h providing air spring stiffness k for said resilient coupler means of sufficient magnitude to limit piston travel toward said end element during impacting operation to the point in piston travel at which the minimum volume of said internal open space is 0.3 Ah thereby restricting such excursions within a range for which said air spring stiffness is substantially constant, and

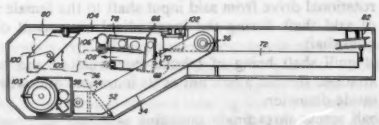
further providing sufficient magnitude for said air spring stiffness k, in combination with said selected mass m, to provide a magnitude of natural frequency w_n of the air spring ram mass combination equal or sufficiently close to the selected frequency w_o of said rotating crankshaft to insure driving said ram means during impacting operation into reciprocating excursions greater than said sufficiently short crank length thereby inducing dynamic amplification of the motion of said ram means.

4,201,270

ROOF BOLTER

William A. Ribich, Lexington; Hans A. Hug, Weston, and Alfred H. Bellows, Belmont, all of Mass., assignors to Foster-Miller Associates, Inc., Waltham, Mass.

Filed May 15, 1978, Ser. No. 906,237
Int. Cl.[2] E21C *5/00*
U.S. Cl. 173—43 **10 Claims**



1. An operator controlled roof bolting system for drilling holes in the roof strata of a mine and for inserting roof bolts into the drilled holes while the operator is in a safe area, said system comprising:

(a) a frame with an outby operator's station;

(b) roof drill means for drilling a hole in the roof strata, said roof drill means mounted to said frame for pivotal movement about an axis between a rest position and a working position;

(c) first means operatively connected to said roof drill means and said frame for pivotally moving said roof drill means about said axis between said rest position and said working position:

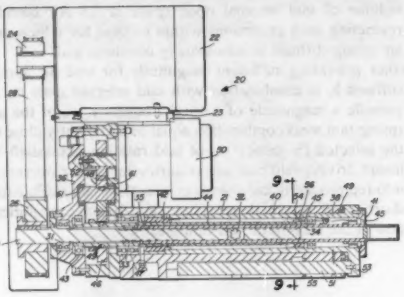
(d) roof bolt inserter means for inserting a roof bolt into a hole drilled in the roof strata by said roof drill means, said roof bolt inserter means mounted to said frame for movement between a retracted position and an extended position, said roof bolt inserter means including slide means mounted to said frame for pivoting movement about said axis; and

(e) second means operatively connected to said roof bolt inserter means and said frame for moving said roof bolt inserter means between said retracted position and said extended position, said roof bolt inserter means proximate to said operator's station when in said retracted position, whereby the operator can place a roof bolt in said roof bolt inserter means while remaining at said operator's station.

4,201,271
QUILL DRIVE WITH VARIABLE FEED

Larry Evans, 5222 Botsford, Sterling Heights, Mich. 48077

Filed Jul. 10, 1978, Ser. No. 923,459
Int. Cl.[2] B23Q 5/027, 5/033
U.S. Cl. 173—146 8 Claims



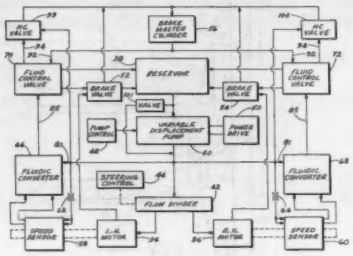
1. A quill drive with variable feed comprising:
a quill shaft slidably mounted for movement along its longitudinal axis;
a spindle shaft rotatably mounted for rotation with respect to said quill shaft and carried longitudinally by said quill shaft during its longitudinal movement;
a first motor drivably connected to an input shaft, said input shaft rotatably mounted within said spindle shaft;
said input shaft having disposed along its inner end a male spline;
said male spline drivingly engaging a female spline disposed at one end of said spindle shaft, said male spline providing rotational drive from said input shaft to the female spline of said shaft during the longitudinal movement of said quill shaft;
said quill shaft being of tubular construction and having attached thereto a ball nut as its inner end and within its inside diameter;
a ball screw threadingly engaging said ball nut, said ball screw being of tubular construction, the inside diameter of said ball screw tube surrounding but not touching the outer diameter of the inner end of said quill shaft, said ball screw extending inwardly a distance equal to the desired longitudinal travel of said quill; and
said ball screw being rotatably supported at its outer end and driven at its outer end by a variable speed, variable direction motor, the speed and direction of said variable speed and variable direction motor determining the direction and rate of feed of said quill.

4,201,272
INTEGRAL HYDRAULIC VEHICLE DRIVE SYSTEM

Lawrence L. Midolo, 1475 Black Oak Dr., Centerville, Ohio 45459

Filed Oct. 24, 1978, Ser. No. 954,944
Int. Cl.[2] B62D 11/04
U.S. Cl. 180—6.48 3 Claims

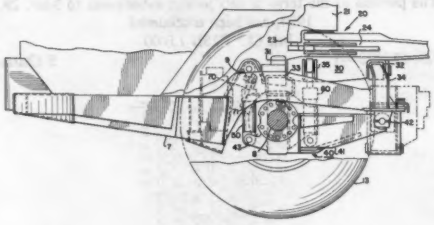
1. A hydraulic drive and braking system for a vehicle comprising: a pair of wheel drive axles; means for supporting said drive axles; a pair of wheels secured to said drive axles; a pair of positive displacement hydraulic motors supported on said drive axle supporting means and connected to said drive axles; a variable displacement hydraulic pump; means for driving said pump; means for selectively controlling the output of said pump; means for connecting the output of said variable displacement pump to said hydraulic motors; means connected between the variable displacement pump and said motors for selectively dividing the output of the variable displacement pump to said hydraulic motors; means for selectively blocking the output of said hydraulic motors to thereby provide braking for the vehicle; said means for selectively blocking the output of said hydraulic motors including a master cylinder and a valve, in the output line of each of the hydraulic motors, responsive to an output from said master cylinder; means, responsive to the rotational speed of the drive axles for reducing the portion of the output of the master cylinder applied to the valves in the output lines of the hydraulic motors as the rotational speed of the drive axles approaches zero speed.



4,201,273
VEHICLE AXLE SUSPENSION SYSTEM

Hardin Joyce, Jr., Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Mar. 6, 1978, Ser. No. 883,804
Int. Cl.[2] B62D 1/00
U.S. Cl. 180—12 15 Claims

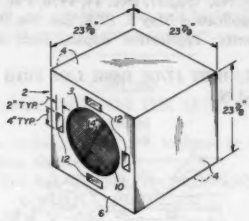


1. A vehicle suspension system for use with an articulated vehicle having a tractor portion carried on a tractor main frame and a trailer portion coupled thereto by a hitching connection which allows the vehicle portions to tilt relative to each other about a coincident axis extending longitudinally through the vehicle tractor and trailer portions comprising;
axle support means pivotally connected to a tractor main frame for supporting a pair of tractor drive wheels for vertical movement relative thereto,
fluid responsive cylinder means coupled between said axle support means and a tractor main frame to oppose and dampen vertical movement of said axle support means relative to said tractor main frame,
hitch connection means for connecting a tractor portion of an articulated vehicle with a trailer portion of said vehicle to allow relative tilt movement therebetween about a coincident axis extending longitudinally through said portions of said vehicle, and
fluid responsive cylinder means coupled between said axle support means and said hitch means to oppose and dampen tilting movement of said portions of said vehicle relative to each other.

4,201,274
SYMMETRICAL SPEAKER HAVING STRUCTURAL REINFORCING PORTS

Christopher F. Carlton, 16001 SW. 102 Ave., Miami, Fla. 33157

Filed Nov. 20, 1978, Ser. No. 962,562
Int. Cl.² H05K 5/00
U.S. Cl. 181—156 6 Claims

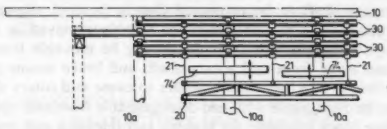


1. An enclosure body for housing a speaker, comprising,
—a cubicle hollow housing having six panels,
—said housing having uniform dimensions,
—one of said panels having a centrally disposed aperture formed therein,
—a speaker mounted within said enclosure body so that its vibratile diaphragm is in registration with said aperture,
—a plurality of rectangular ports having a major dimension and a minor dimension formed in said apertured panel in equi-distant, radial relationship,
—said major dimensions of said rectangular ports lying along the outer periphery of the apertured panel so that the ends of center axes along such major dimensions lie in an imaginery circle concentric with the circular aperture.

4,201,275
MEANS FOR THE RENOVATING AND REFURBISHING OF OVERHEAD STRUCTURES

Alexander S. Sinclair, Cheadle, and Barry C. Eccleston, Consett, both of England, assignors to A. Monk & Company Limited, Cheshire, England

Filed Oct. 18, 1977, Ser. No. 843,294
Claims priority, application United Kingdom, Oct. 20, 1976, 43429/76
Int. Cl.² E04G 3/12, 3/16
U.S. Cl. 182—37 3 Claims

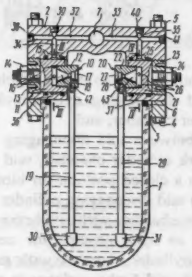


1. The method of treating a large span overhead structure which comprises:
(a) Securing beam trolley elements to ribs or frame members of the overhead structure at predetermined positions;
(b) Lifting runway beam sections and engaging same with the wheels of said trolley elements whereby said runway beams are displaceably associated with said ribs or frame members;
(c) Suspending lightweight mobile cradles from said runway beams;
(d) Adding further beam trolley elements to succeeding ribs or frame members utilising said mobile cradles;
(e) Lifting in further sections of runway beams and connecting same to the first sections;
(f) Repeating operations (d) and (e) until a sufficient number of ribs or frame members (depending upon the load to be supported) have been spanned by said runway beams;
(g) Lifting working platforms into operative proximity with the structure and suspending same from the runway beams via said beam trolley elements; and
(h) Treating succeeding sections of the overhead structure by alternately advancing the working platforms along the runway beams and the runway beams relative to the structure as required.

4,201,276
VORTEX-TYPE OIL MIST GENERATOR

Viktor P. Bardin, ulitsa Oktyabrskaya 17/3, kv. 43, Kolpino Leningradskoi oblasti; Evgeny A. Petrov, ulitsa Bela Kuna, 27, korpus 1, kv. 53, Leningrad; Viktor M. Rudelson, pereulok Makarenko, 3, kv. 32, Leningrad, and Jury L. Sternik, Zanevsky prospekt, 43, kv. 170, Leningrad, all of U.S.S.R.

Filed Nov. 2, 1978, Ser. No. 956,891
Int. Cl.² F16N 7/34
U.S. Cl. 184—55 A 3 Claims



1. A vortex-type oil mist generator comprising a first nozzle having tangential gas delivery channels to generate a rotating flow of gas, an oil delivery duct supplying the oil into the rotating flow of gas to create a rotating flow of oil mist, and an oil mist outlet; a second nozzle having tangential gas delivery channels to generate a rotating flow of gas, an oil delivery duct supplying the oil into the rotating flow of gas to create a rotating flow of oil mist, and an oil mist outlet; said outlet of said second nozzle facing said outlet of said first nozzle; said tangential gas delivery channels of said second nozzle being arranged so as to ensure the rotation of the oil mist flow exiting from said second nozzle outlet in the direction opposite to the direction of rotation of the oil mist flow exiting from said outlet of said first nozzle.

4,201,277
HYDRAULIC ACTUATION SYSTEM FOR A RAIL VEHICLE

Bruno Meier, Winterthur, and Otto Luginbuhl, Oberthal, both of Switzerland, assignors to Schweizerische Lokomotiv-und Maschinenfabrik, Winterthur, Switzerland

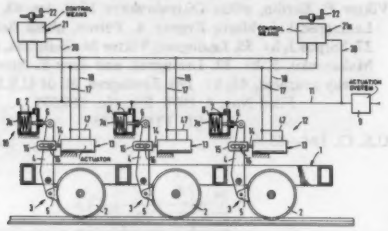
Filed Nov. 28, 1978, Ser. No. 964,361
Claims priority, application Switzerland, Nov. 28, 1977, 014531/77
Int. Cl.² F16D 65/56
U.S. Cl. 188—196 D 16 Claims

1. An hydraulic brake actuation system for a rail vehicle comprising at least one double-acting reciprocating actuator for selectively engaging and disengaging a brake, said actuator including
a cylinder;
a work piston slidably mounted in said cylinder to define a return cylinder chamber on one side and a work cylinder chamber on an opposite side thereof;
a screw-threaded spindle extending from said piston;

a reversible screw-threaded connection between said spindle and said work piston to permit rotation of said spindle relative to said piston;

a friction brake member mounted on said spindle, said member having rotatable brake surface thereon;

a release means including an insert in said cylinder having a stationary brake surface opposite said rotatable brake surface, and a disengaging piston slidably mounted in said insert to selectively move said friction brake member away from said insert and to define a disengaging cylinder chamber in said insert, said disengaging piston being disposed in facing relation to said rotatable brake member to separate said disengaging cylinder chamber from said work cylinder chamber; and



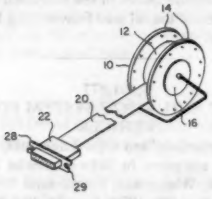
a relief valve between said disengaging cylinder chamber and said work cylinder chamber, said valve being movable between a closed position for blocking communication between said disengaging cylinder chamber and said work cylinder chamber with said brake surfaces in spaced relation and an open position for communicating said disengaging cylinder chamber with said work cylinder chamber with said brake surfaces in contact with each other.

4,201,278

PORTABLE ELECTRICAL CABLE INTERCONNECTION ASSEMBLY

Dan R. Balde, Flemington, N.J., assignor to db Systems Ltd., Flemington, N.J.

Filed Aug. 2, 1978, Ser. No. 930,231
Int. Cl.[2] H02G *11/02*
U.S. Cl. 191—12.4 **7 Claims**



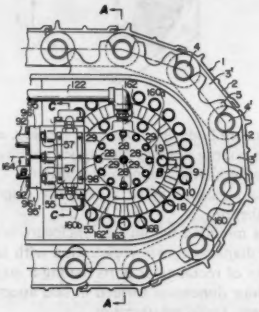
1. An electrical cable assembly comprising a rotatable reel including a drum mounted between a pair of side plates, and a flat, wire-containing cable adapted for being wound onto and from the drum, the outer end of said cable terminating in a first connector member providing electrical access to the wires of said cable, said connector member having a pair of ears extending in opposite directions, the distance from end to end of said ears being greater than the distance between said side plates, and each of said side plates having a number of openings therethrough spaced thereabout, each opening in one of said side plates being aligned with a corresponding opening in the other of said side plates, and said ears being dimensioned to fit within any of said aligned pairs of openings for locking said cable to said reel.

4,201,279

DRIVE CONTROLLING MECHANISM

Kiyozumi Fukui, Gifu, Japan, assignor to Teijin Seiki Company Limited, Osaka, Japan

Division of Ser. No. 750,537, Dec. 14, 1976, Pat. No. 4,114,737.
This application May 5, 1978, Ser. No. 903,043
Claims priority, application Japan, Dec. 18, 1975, 50-171224[U]
Int. Cl.[2] B60T *17/04*; B60R *3/02*; F01B *13/06*
U.S. Cl. 192—3 N **9 Claims**



1. A drive controlling mechanism comprising in combination:

a hydraulic motor including a cylinder block, a rotary shaft extending axially of and positioned within said cylinder block, and rotating means operable to rotate said rotary shaft and having a pair of actuation ports through which fluid under pressure is introduced to rotate said rotary shaft;

a motor housing accommodating therein said hydraulic motor to define a drain chamber therebetween and opened at its axially inner end for facilitating the accommodation of said hydraulic motor in said motor housing;

an operative block assembly securely connected with said motor housing to close said axially inner end of said motor housing and having an axial through bore to rotatably receive said rotary shaft;

a parking brake arrangement including a hydraulic chamber formed in said operative block assembly to allow said rotary shaft to be projected therein in axial alignment therewith, a movable member slidably received in said hydraulic chamber to hydraulically be movable toward and away from said rotary shaft, and brake means provided in said hydraulic chamber to cause said rotary shaft to be engageable with and disengageable from said operative block assembly for braking and releasing said rotary shaft upon movement of said movable member;

a control valve arrangement provided to control rotation of said hydraulic motor and actuation of said parking brake arrangement;

a pair of inlet-outlet passages connecting said actuation ports of said rotating means of said hydraulic motor and said control valve arrangement;

a control conduit arrangement including a first control conduit having one end in fluid communication with said control valve arrangement and a second control conduit having one end in fluid communication with said hydraulic chamber and the other end opened at the longitudinally intermediate portion of said first control conduit where the other end of said second control conduit is opened and a shuttle valve is provided so as to permit fluid under pressure to be introduced into said hydraulic chamber

from said control valve arrangement through said first and second control conduits and to permit fluid under pressure to be discharged from said hydraulic chamber through said first and second control conduits; and

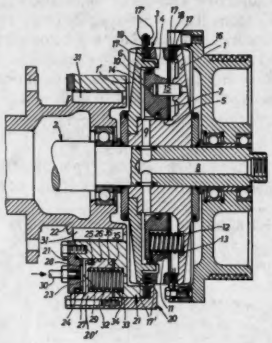
a drain passage arrangement having one end in fluid communication with the other end of said first control conduit and the other end in fluid communication with said drain chamber to allow fluid under pressure discharged into said first and second conduits from said hydraulic chamber to be introduced into said drain chamber.

4,201,280

CLUTCH-BRAKE UNIT FOR THE MAIN SHAFT OF A LOOM

Ernst Gattiker, Arbon, Switzerland, assignor to Adolph Saurer Limited, Arbon, Switzerland

Filed Apr. 28, 1978, Ser. No. 901,076
Int. Cl.[2] F16D *11/06*
U.S. Cl. 192—18 A **5 Claims**



1. Clutch-brake apparatus for the main shaft of a loom which includes a disconnectable friction coupling disposed between said main shaft and a driving motor, said apparatus comprising:

brake means rigidly connected to a frame portion of said loom;

a slidable pressure-piece having a first extreme position in which frictional engagement between the main shaft and the driving motor is effected;

said pressure-piece having a second extreme position in which frictional engagement between the main shaft and said brake means is effected; and

means operative to release said brake means without alteration of said second position of said pressure-piece.

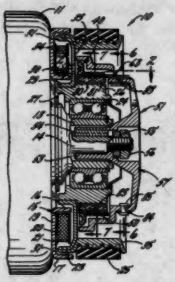
4,201,281

ELECTROMAGNETIC CLUTCH HAVING A CONTRACTIBLE FRICTION SHOE

J. G. Fraser MacDonald, Rockford, Ill., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed May 22, 1978, Ser. No. 908,354
Int. Cl.[2] F16D *13/08, 27/10*
U.S. Cl. 192—35 **11 Claims**

1. A normally disengaged clutch comprising a rotatable driving member having a hub, a driven member rotatable about the same axis as the driving member, a radially contractible shoe surrounding said hub, resiliently yieldable coupling means connecting said shoe and said driven member for rotation in unison, said coupling means enabling radial contraction of said shoe around said hub and normally holding said shoe out of radial engagement with said hub, a helically coiled spring telescoped over said shoe and having one end secured to said driven member to rotate with the latter, means associated with said driving member and selectively operable to cause the opposite end of said spring to rotate with said driving member thereby to cause said spring to wrap down on said shoe and contract said shoe radially into frictional gripping engagement



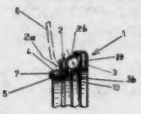
with said hub to transmit torque (1) from said hub to said shoe (2) from said shoe to said coupling means and (3) from said coupling means to said driven member.

4,201,282

CLUTCH RELEASE ASSEMBLY AND BEARING THEREFOR

Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 23, 1977, Ser. No. 809,208
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1976, 7621572[U]
Int. Cl.[2] F16D *19/00*; F16C *19/10*
U.S. Cl. 192—98 **14 Claims**



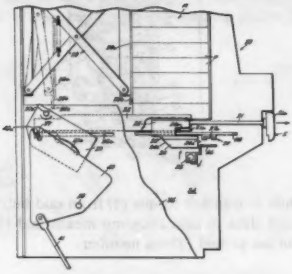
1. In a clutch throw-out device having a clutch bearing with first and running bearing ring means defining bearing races, at least a portion of said races being radially spaced apart, and rolling elements positioned in said races between said ring means and inhibiting relative radial displacement therebetween, diaphragm or dished clutch release spring means axially engaging said running bearing ring means, whereby radial play may exist between said clutch release spring means and said running bearing ring means, said running bearing ring means having an axially extending portion extending through a central bore in said clutch release spring means; the improvement comprising a damping member mounted radially between said axially extending portion of said running bearing ring means and said clutch release spring means.

4,201,283

PILFERAGE PROTECTION FOR SATELLITE VENDING MACHINE HAVING DUAL PRICING CAPABILITY

Philip F. Jacobs; Evelyn Friedman; Peter Southall, and William Carswell, all of Whitehall, N.Y., assignors to E. B. Metal Rubber Industries, Inc., Whitehall, N.Y.

Filed May 31, 1978, Ser. No. 911,223
Int. Cl.[2] G07F *11/20*
U.S. Cl. 194—1 A **18 Claims**



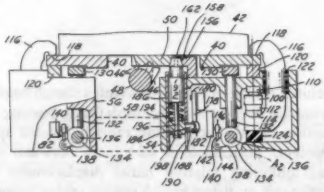
3. The combination of a parent vending machine with a satellite machine mounted thereon, a plurality of ejectors on each machine for selective manual pullout and return actuation thereof to dispense articles stored in the respective machine, a latch mechanism in each machine for locking and releasing the ejectors of the respective machine, a coin-actuated totalizer unit located in the parent machine having a latch release means adapted to unlatch the latch mechanism of the parent machine as a function of coin deposit in the parent machine, a linkage between said parent and said satellite latch mechanism for operating the satellite latch mechanism under direct control of the latch mechanism of the totalizer unit in the parent mechanism, and means, independent of said linkage, for normally maintaining unlatched said satellite latch mechanism and being responsive to pullout movement of a satellite ejector on predetermined coin deposit in the parent machine to release the satellite latch mechanism for positioning by said linkage in response to the positioning of the parent latch mechanism.

4,201,284

PALLET REGISTRY SYSTEM

John H. Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

Filed Nov. 2, 1978, Ser. No. 957,300
Int. Cl.[2] B65G *47/00*
U.S. Cl. 198—345 **34 Claims**



1. In a multiple station transfer machine in which workpieces are located and supported in pallets, and in which said pallets are sequentially moved along a transfer line and precisely located in each station for a work operation, that improvement which comprises:

(a) a registry frame,

(b) support means for pallets at each station on said frame,

(c) two fixed spaced lateral locator surfaces on said frame at each station,

(d) two fixed lateral locator surfaces on each pallet spaced similarly to those on the frame,

(e) a first lateral force application surface on said frame spaced between said locator surfaces on said frame and a predetermined distance away from a line connecting said locator surfaces,

(f) a second lateral force application surface on each said pallet located to register substantially with said first lateral force application surface when a pallet is brought to a particular station,

(g) each said lateral force application surface presenting non-parallel spaced areas angled with respect to each other and angled obliquely with respect to the line connecting said locator surfaces, and

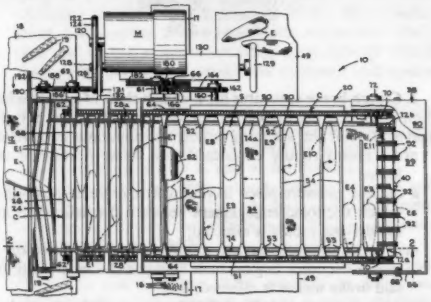
(h) means to interfit complementally with said spaced areas of said first and second lateral force application surfaces and movable into engagement with said first and second surfaces to move said force application surfaces with respect to each other to move a pallet into a proper registry position wherein said lateral locator surfaces of said frame and a pallet are in positive contact, and said first and second force application surfaces are positioned in desired final registration with respect to each other.

4,201,285

AUTOMATIC CORN CUTTER FEEDER

Neal C. Chamberlain, Hoopeston, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Jul. 14, 1976, Ser. No. 705,374
Int. Cl.[2] B65G *47/24*
U.S. Cl. 198—400 **6 Claims**



1. A feeder for feeding tapered elongate articles of varying length, such as ears of corn, to processing apparatus such as a corn cutter; said feeder comprising means for feeding individual articles at random end to end orientation to a preorienting conveyor; said preorienting conveyor having laterally spaced side walls and comprising means for simultaneously advancing individual articles with their axes in generally parallel relation along a path normal to the axes of the articles while shifting the articles along their axes toward the side walls to form two lanes with the smaller ends of the articles in one lane pointing in a direction opposite to that of the smaller ends of the articles in the other lane, and with the articles in one lane being staggered longitudinally of their path relative to the articles in the other lane, means for successively dropping the preoriented articles of each lane from the delivery end of said preorienting conveyor for gravity fall while their axes are disposed generally horizontally, and a downwardly inclined slide plate for receiving said falling articles, the improvement wherein said slide plate has downwardly directed, angularly diverging deflector plates with the vertex of their angle of divergence being substantially at the midplane of said slide plate, said deflector plates successively intercepting one end portion of

the articles of each lane while accommodating continued sliding motion of said one end portion along the deflector and slide plates, the other, non-intercepted end portion of each article sliding freely down the slide plate to a position below its intercepted end portion, said slide plate having converging side walls for deflecting said other ends of the articles toward the midplane of the slide plate as the articles slide down off said deflector plates, said converging sidewalls bringing the articles into single file, end to end orientation with the smaller ends pointing in the same direction, said slide plate having an uninterrupted surface for supporting the sliding articles during said orientation, and conveyor means for receiving the oriented articles of both lanes from a lower portion of the slide plate and delivering them in end to end relationship to processing apparatus.

4,201,286

APPARATUS FOR THE INDIVIDUAL CONVEYING OF PRINTED PRODUCTS ARRIVING IN AN IMBRICATED PRODUCT STREAM

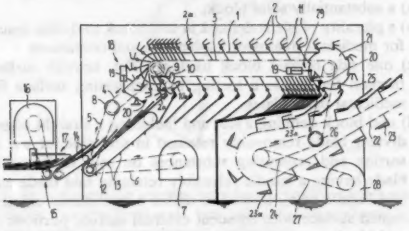
Jacques Meier, Gossau, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed May 22, 1978, Ser. No. 908,538

Claims priority, application Switzerland, Jun. 6, 1977, 6921/77

Int. Cl.² B65H *29/04*

U.S. Cl. 198—461 **10 Claims**



1. An apparatus for individually conveying printed products arriving in an imbricated product stream, comprising:

a number of driven controlled grippers;

means for revolvingly driving and guiding said number of given controlled grippers in a closed path of travel for engaging the leading edge of the printed products;

said means for driving said grippers containing means for temporarily restraining the movement of the grippers;

said gripper drive means having at least one continuously driven sluice for the cycled recall of the restrained grippers;

an endless revolving conveyor element equipped with entrainment members engaging the trailing edges of the products operatively associated with said sluice;

said entrainment members being provided at a substantially uniform spacing at the conveyor element;

means for driving the conveyor element in cycle as concerns the entrainment members thereof with the sluice and opposite in sense to the sense of revolving movement of the grippers;

an infeed device having a drive means;

said sluice having a drive means; and

a synchronous control for operatively coupling the drive means of the infeed device with the drive means of the sluice.

4,201,287

DRAG CHAIN CONVEYOR

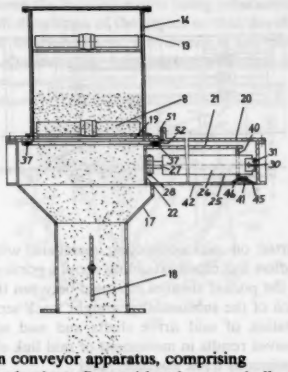
Paul Straub, and Heinrich Jost, both of Oberuzwil, Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Switzerland

Filed Apr. 21, 1978, Ser. No. 898,665

Claims priority, application Switzerland, Dec. 14, 1977, 15359/77

Int. Cl.² B65G *47/19*

U.S. Cl. 198—530 **3 Claims**



1. Drag chain conveyor apparatus, comprising

(a) a conveyor having a floor with at least one bulk material discharge opening therein,

(b) discharge housing means, including a downwardly extending pipe, mounted under said floor, around said discharge opening,

(c) said discharge housing means having an aperture in a side wall thereof,

(d) a sealed slide box mounted outside said discharge housing means on said side wall thereof, over said aperture,

(e) a slide plate having a first generally horizontally extending portion adapted to seal said discharge opening in a first position thereof, and a second generally vertically extending portion thereof, and

(f) means for selectively moving said slide plate either to said first position beneath said discharge opening to block the flow of bulk material through said discharge opening, or to said second position in said slide box to permit discharge through said opening while sealing said aperture;

wherein said slide plate is a generally L-shaped member having said second portion at one end thereof, wherein a downwardly directed end cover is mounted near an opposite end thereof, and wherein a resilient wiper is mounted on a bottom edge of said end cover to engage a lower wall of said slide box during movement of said slide plate toward said first position.

4,201,288

LINK CHAIN CONVEYOR ASSEMBLY

Pieter van Capelleveen, Zeist, Netherlands, assignor to Gebr. van Capelleveen B.V., Netherlands

Filed Mar. 6, 1978, Ser. No. 883,974

Claims priority, application Netherlands, Mar. 8, 1977, 7702497; Jan. 19, 1978, 7800640

Int. Cl.² B65G *21/18*

U.S. Cl. 198—778 **11 Claims**

1. A link chain conveyor assembly for transporting dough pans through a proofing chamber and the like, and comprising:

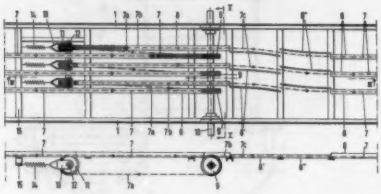
a substantially helically-shaped, conti-uous track assembly made up of a plurality of parallel, substantially straight track sections forming a plurality of vertically spaced levels of said conveyor assembly, wherein each pair of straight track sections positioned on adjacent levels is

interconnected by a further curved track section sloping therebetween;

each of said straight and curved track sections including a pair of spaced side wall portions interconnected by at least one connecting member and each of said substantially straight track sections further including a drive shaft extending between said spaced side wall portions, with at least one pocket sheave fixedly mounted on each drive shaft;

an endless link chain assembly positioned between the spaced side wall portions of said track sections and supported on said connecting members, with a portion of endless link chain extending about a portion of at least one of the pocket sheaves mounted between the side walls of each of the substantially straight track sections, whereby rotation of said drive shafts and said attached pocket sheaves results in movement of said link chain along said continuous track assembly; and

tensioning means mounted between the spaced side walls of each of said straight track sections for engaging and tensioning a portion of said link chain extending between a pair of adjacent pocket sheaves.

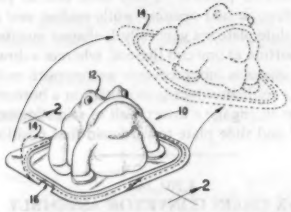


4,201,289

PRIMARY PACKAGE FOR A SPACE AIR TREATING DEVICE

Frank J. Mack, Kinnelon, and Walter M. Ronayne, Westfield, both of N.J., assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,193
Int. Cl.[2] B65D *85/70*
U.S. Cl. 206—0.5 **4 Claims**



1. A combination mold and primary package for a space air treating device comprising:

A. an outer shell having

1. a cavity formed in its center in a predetermined pattern which is a replica of the shape of the space air treating device;
2. a flange surrounding said cavity;
3. sealing means defined in said flange entirely around said cavity;

B. an inner core extending into said outer shell and having

1. a cavity formed in its center, said cavity being smaller than said outer shell cavity, and with said outer shell defining a chamber;
2. a plurality of undercuts defined on the chamber side of said cavity;
3. a flange surrounding said cavity;
4. sealing means defined in said flange entirely surrounding said cavity and cooperating with said outer shell sealing means to form a liquid tight seal; and

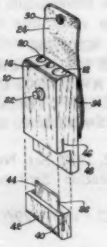
C. a hollow, space air treating device formed of a solid material disposed in said chamber and filling said predetermined pattern whereby said air treating device may be stored with said outer shell and inner core sealed together and may be activated by the removal of said outer shell.

4,201,290

CARRYING CASE FOR HERBS AND MEDICINE

Henry L. Madden, 1442 Oakdale, Shreveport, La. 71108

Filed Dec. 6, 1978, Ser. No. 966,942
Int. Cl.[2] A45C *15/00*; B65D *69/00*
U.S. Cl. 206—38 **3 Claims**



1. a carrying case for herbs and medicines comprising:

(a) a substantially solid block;

(b) a plurality of wells defined in said block to define spaces for medicinal treatment implements and containers;

(c) one side of said block having a flat, smooth surface thereon for use as a sorting and separating surface for medicinal particulates;

(d) said block defining a slot and including a straight edged divider blade removably retained in said slot for use in sorting and separating substances on said surface said blade having a handle releasibly retaining said blade and said handle being shaped to define a continuous uninterrupted surface with adjacent external surface portions of said block;

(e) a flexible flap mounted along one edge to said block and having a terminal fastener at one edge opposite said one edge to releasibly fasten to a portion of said block; and

(f) said flap being mounted and dimensioned such that when said terminal fastener is fastened said flap is extended substantially flush over said sorting surface to protect same and said wells to provide a cover for same.

4,201,291

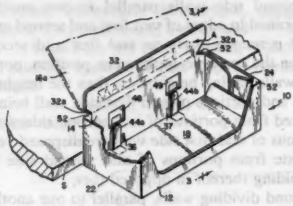
DISPLAY CARTON

Thomas L. Davidson, Uncasville, Conn., assignor to Robertson Paper Box Co., Inc., Montville, Conn.

Filed Jan. 2, 1979, Ser. No. 136
Int. Cl.[2] B65D *5/64*
U.S. Cl. 206—44 R **7 Claims**

1. An improved display carton comprising top and bottom wall panels, front and rear wall panels, and a pair of end wall panels all hinged together to form a generally rectangular enclosure, said carton rear wall being formed of a plurality of plies, means adhering said plies together to form a relatively tear-resistant laminated wall structure, means defining one or more bracket-receiving openings in said carbon whereby said carton may be supported by way of its said rear wall, means defining a tear line extending over a portion of said carton around a closed path to facilitate the complete removal of at

least a portion of said carton top wall so as to expose the contents of said carton, and a carton flap connected to one of said rear wall plies underneath said top wall so that when said



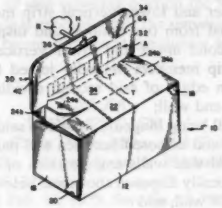
top wall portion is removed, said flap projects up out of the carton and stands more or less coplanar with the wall ply to which it is connected.

4,201,292

DISPENSER CARTON

Thomas L. Davidson, Uncasville, and Charles F. Gonet, Voluntown, both of Conn., assignors to Robertson Paper Box Co., Inc., Montville, Conn.

Filed Jan. 12, 1979, Ser. No. 3,542
Int. Cl.[2] B65D *5/64*
U.S. Cl. 206—44 R **6 Claims**



1. In a dispensing carton including hinged-together panels defining a carton front wall, rear wall, bottom wall and a pair of end walls, the improvement comprising

A. a completely closed carton top wall,

B. means in the carton top wall to facilitate removing at least a section of the carton top wall from said carton to provide an opening into the carton,

C. said rear wall including a support panel projecting up at the junction between the carton rear wall and the carton top wall, said support panel including a lower portion whose dimensions correspond substantially to the removable section of the carton top wall and an upper portion hinged to the lower portion so that, when the removable wall section is removed, the opening left thereby can be closed by folding down the lower support panel portion over the opening with the upper support panel portion projecting through the opening into the carton.

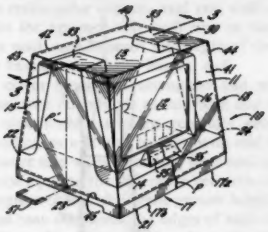
4,201,293

PACKAGE FOR PROTECTION AND DISPLAY OF CLOCKS AND THE LIKE

Anthony W. Rigazio, Oglesby, and Allen Rubin, Highland Park, both of Ill., assignors to Spartus Corporation, Skokie, Ill.

Filed Jan. 15, 1979, Ser. No. 3,705
Int. Cl.[2] B65D *5/50, 25/10, 25/54, 81/06, 85/40*
U.S. Cl. 206—45.19 **19 Claims**

1. In a package for protection and display of an object such as a clock, the combination comprising a flat base having a central supporting area and having front, back and lateral edges, the base having integral therewith narrow pedestals including vertical portions which extend upwardly along the lateral edges of the base, the pedestals having respective overhanging portions extending horizontally inwardly at the top thereof, the inside spacing between the vertical portions of the pedestals being substantially the same as the lateral dimension of the object, the inside height of the overhanging portions being substantially the same as the height of the object, spaced locating means including an embossment on the base defining the front-to-back dimension of the supporting area and spaced inwardly with respect to the front and back edges of the base, the spacing between the locating means being substantially the same as the depth dimension of the object so that the object is held captive and cradled against movement in any direction with respect to the base, the base having a vertical parting



plane permitting separation of the base into two halves for insertion of the object into seated position therebetween, the two halves being each integrally formed of resilient foamed plastic, an inverted cup-shaped shell of transparent plastic having a lower edge conforming to the profile of the base and having sufficient head room as to accommodate the pedestals, the lower edge of the shell being in snug area-engagement with the base and the inner wall of the shell being in mutually supportive area-engagement with the pedestals so that when the shell is applied the two halves of the base are clamped together with the object captive between them yet substantially in full view, and means for temporarily securing the shell to the base to discourage disassembly of the shell from the base and tending to insure that the object is viewed only through the shell and remains untouched and in new condition until the time of sale.

4,201,294

HAND LOCKED DISPLAY CARTON AND BLANK THEREFORE

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed May 7, 1979, Ser. No. 36,373
Int. Cl.[2] B65D *75/02, 65/16*
U.S. Cl. 206—45.14 **22 Claims**

1. A hand locked display carton for an elongated bottle having at one end a cap, while the other end thereof is a closed base portion, wherein the width and length of the carton are of greater width and length than the bottle and cap portion, with said carton providing an unobstructed view of two opposed sides of the bottle, said carton comprising:

an upper display panel;

two inclined panels hingedly connected to said upper display panel, each inclined panel including an upper aperture therein which substantially corresponds to the configuration of said cap portion of the bottle such that the cap portion of said bottle is engaged in said upper apertures to prevent lateral movement of the cap of the bottle within said carton;

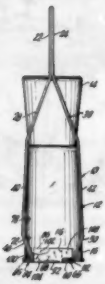
two main display panels respectively hingedly connected to the two inclined panels, with the inner surfaces of said main display panels abutting the front and rear sides of said bottle, said front and rear sides of said bottle being

orthogonal relative to the exposed opposed sides of the bottle;

first and second lower support panels hingedly connected to the main display panels, each of said lower support panels having a lower aperture therein such that the lower portions of the front and rear sides of said bottle project through and are engaged in said lower apertures to prevent lateral movement of the lower end of said bottle within said carton;

an inner bottom panel, hingedly connected to the second lower support panel, the upper surface of said inner bottom panel abutting the bottom of the bottle, said inner bottom panel including two locking flanges disposed adjacent the second lower support panel; and

a generally rectangular outer bottom panel hingedly connected along one side thereof to the first lower support panel and disposed directly beneath said inner bottom panel, said outer bottom panel including two generally rectangular flanges hingedly connected along the other opposed side edges thereof, with the hinge connection, between each said generally rectangular flange and the outer bottom panel, extending perpendicularly from the hinge line disposed between the first lower support panel and the outer bottom panel to a point intermediate the length of the outer bottom panel, with the remaining distance along said perpendicular line defining a locking cut line, said generally rectangular flanges being disposed upright and generally perpendicular relative to said outer bottom panel such that said locking flanges engage said rectangular flanges along the locking cut lines thereby locking the carton in the closed position.

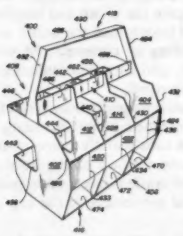


4,201,295

PLASTIC COLLAPSIBLE ARTICLE CARRIER

Paul J. Morcom, Rte. 1, Box 235, Henderson, Tex. 75652

Division of Ser. No. 667,679, Mar. 17, 1976, Pat. No. 4,113,087.
This application Apr. 24, 1978, Ser. No. 899,258
Int. Cl.[2] B65D *85/30*
U.S. Cl. 206—174 6 Claims



1. A plastic collapsible article carrier having open and closed positions and adapted to be formed by injection molding of plastic within opposing dies comprising:

first and second end walls parallel to one another when the carrier is in the open position;

first and second side walls parallel to one another and hingedly joined to edges of said first and second end walls to extend perpendicularly to said first and second end walls when the carrier is in the open position, portions of said side walls having heights less than the height of said end walls and portions of said first side wall being vertically spaced from portions of said second side wall, such that portions of said first side wall are disposed vertically intermediate from portions of said second side wall to enable molding thereof in opposed dies;

first and second dividing walls, parallel to one another and parallel to said end walls, said first and second dividing walls being hingedly joined at spaced locations to said first and second side walls and being disposed between said first and second side walls to form a plurality of receiving cellular compartments between said first and second side walls within the collapsible article carrier;

said second side wall comprising:

first upper and lower vertical strip members vertically displaced from one another and hingedly joined to and extending between edges of said first end wall and said first dividing wall;

second upper and lower vertical strip members vertically displaced from one another and disposed adjacent to said first upper and lower vertical strip members, said strip members hingedly joined to and extending between edges of said first dividing wall and said second dividing wall; and

third upper and lower vertical strip members vertically displaced from one another and disposed adjacent to said second upper and lower vertical strip members, said strip members hingedly joined to and extending between edges of said second dividing wall and said second end wall;

a medial wall being hingedly joined to said first and second end walls and disposed between and parallel to said first and second side walls and portions of said medial wall being vertically disposed above and below portions of said second side wall; and

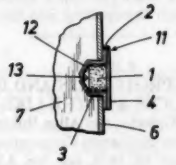
a bottom member hingedly joined to edges of at least one of said walls, wherein the collapsible article carrier may be folded about said hinged joints to a flat collapsed position and folded to the open position to form a plurality of open ended cellular compartments for receiving articles.

4,201,296

PRESERVATIVE FOR FILM

Heinrich Hrabik, Linz, Austria, assignor to Bonum-Werk Inhaber Friedrich Hetzmannseder, Linz, Austria

Filed Oct. 2, 1978, Ser. No. 947,533
Claims priority, application Austria, Aug. 7, 1978, 5704/78
Int. Cl.[2] B65D *81/24, 85/67*
U.S. Cl. 206—205 7 Claims



1. A preservative for protecting a film reel in a magazine, which comprises a capsule and a tablet containing compacted camphor powder, the tablet being sealed in the capsule.

4,201,297

PACKAGE ARRANGEMENT FOR A DOCTOR BLADE, ESPECIALLY FOR AN INTAGLIO OR GRAVURE PRINTING DOCTOR

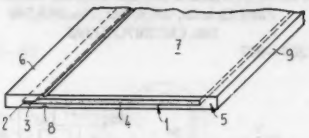
Max Dätwyler, Bleienbach, Switzerland, assignor to Max Dätwyler & Co., Bleienbach, Switzerland

Filed May 21, 1979, Ser. No. 41,237

Claims priority, application Fed. Rep. of Germany, May 30, 1978, 2823603

Int. Cl.[2] B65D *85/54*

U.S. Cl. 206—349 **16 Claims**



1. A packaging arrangement for at least one doctor blade, especially for gravure printing, having at least one work edge at one longitudinal side thereof, comprising:

enclosure means surrounding at least part of said doctor blade;

said enclosure means having a portion covering the work edge of the doctor blade; and

means defining a separation location for disconnectingly joining said covering portion of the enclosure means with a remaining portion of said enclosure means, so that upon disconnection of said covering portion the work edge of the doctor blade is exposed while the remaining portion of the enclosure means remains at the doctor blade.

4,201,298

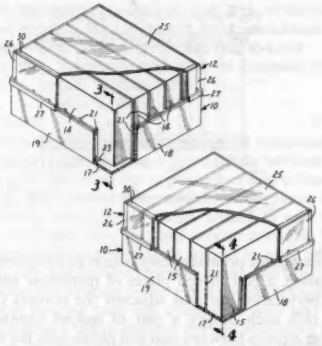
STORAGE CASE

Donald A. Larson, Circle Pines, Minn., and Theodore J. Reichert, Turtle Lake, Wis., assignors to Hartzell Manufacturing, Inc., St. Paul, Minn.

Filed Feb. 14, 1979, Ser. No. 11,799

Int. Cl.[2] B65D *85/30*

U.S. Cl. 206—387 **4 Claims**



1. A storage case for two different sizes of rectangular objects, comprising:

a rectangular base having a rectangular end wall and rectangular side walls extending generally perpendicularly from said end wall a distance less than the height of the rectangular object having the greater height, a first pair of opposed side walls being spaced a distance generally equal to the length of a first of the rectangular objects and the second pair of opposed side walls being spaced a distance generally equal to the length of the second of the rectangular objects,

a plurality of ribs extending from the interior of said side walls, the length of said ribs running perpendicular to said end wall of said base and each rib being aligned with a rib on the opposed side wall, said ribs on the first pair of opposed side walls being spaced apart a distance generally equal to the width of the first rectangular object and said ribs on the second pair of opposed side walls being spaced apart a distance generally equal to the width of the second rectangular object, each rib adjacent an end of a said side wall being spaced from a plane connecting the free ends of the ribs on the adjacent side wall a distance equal to the spacing between said ribs on said side wall,

a pluraity of ribs extending from the interior of said end wall of said base a distance equal to the difference in height between the rectangular objects, said end wall ribs running between the opposed side wall ribs on the pair of opposed side walls spaced apart the length of the rectangular object having the greater height, and

a rectangular cover having a rectangular end wall with generally the same dimensions as said base end wall and rectangular side walls extending generally perpendicularly from said cover end wall to align with said base side walls, said cover side walls extending from said cover end wall a distance equal to the difference between the height of the rectangular object having the greater height and the height of said base side walls, the edges of said cover side walls being formed to mate with the edges of said base side walls to position said cover on said base.

4,201,299

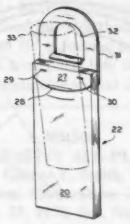
BAG

Robert L. Bumgarner, 7505 SW. 82 St., and Arthur O. Knutson, 1164 SW. 67th Ave., both of Miami, Fla. 33143

Filed Jun. 6, 1978, Ser. No. 913,200

Int. Cl.[2] B65D *85/62*

U.S. Cl. 206—554 **15 Claims**



1. A plastic bag comprising an elongated tubular, thin plastic film member which has two opposed sides, is closed on one end, and has at least one open edge on the other end, and hang means comprising a horizontally oriented slit means formed through both sides of the thin plastic film member and near the open edge at the other end thereof, for hanging the bag on an object, said slit having a length which is large enough to fit over the object and being surrounded by an unbroken area of film.

4,201,300

CAPSULE PACKAGE

Richard J. Klingaman, Darien, Conn., and Arthur V. Boyce, Jr., New York, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

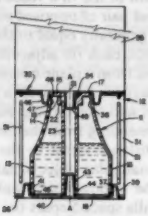
Continuation of Ser. No. 734,903, Oct. 22, 1976, abandoned. This application Jul. 5, 1978, Ser. No. 922,089

Int. Cl.[2] B65D *5/50*

U.S. Cl. 206—45.19 **7 Claims**

1. A package comprising a sealed closed liquid filled con-

tainer having axially aligned top and bottom tubular recesses, and a surrounding open-ended carton having top and bottom walls integrally formed with annular ribs projecting toward each other from the inner surfaces of said top and bottom walls and defining aligned opposed internally open wells extending peripherally around and receiving and confining the top and



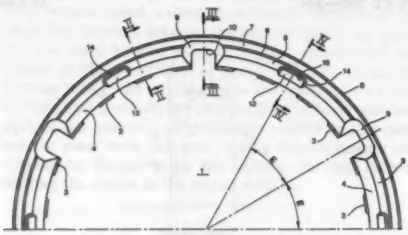
bottom respectively of said container, said wells containing integral coaxial posts surrounded by said ribs and projecting toward each other internally of the carton and of such size as to snugly enter said top and bottom recesses in the confined container, and said carton being formed from a single elongated strip of relatively stiff sheet material having a succession of carton wall sections joined by transverse hinge regions.

4,201,301

CONTAINER FOR THE TRANSPORT OR STORAGE OF FOOD, PARTICULARLY PIZZA

Giordano Aggio, 163/1, Via S. Faustino, 41100 Modena, Italy

Filed Mar. 14, 1979, Ser. No. 20,473
Claims priority, application Italy, Mar. 14, 1978, 40040 A/78
Int. Cl.[2] B65D *21/00, 85/72, 102/26*
U.S. Cl. 206—507 **9 Claims**



1. Container for the transport or storage of food, comprising:
- a side wall shaped as a truncated cone or truncated pyramid with any chosen number of sides, growing narrower towards the bottom;
- a bottom wall connected to the lower end of said side wall; and
- a projecting upper grip and stiffener rim extending from the top of said side wall, said rim having a peripheral edge;

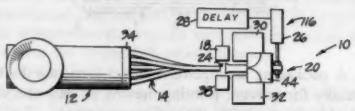
wherein said side wall includes:
- a small peripheral step therein below and inside of the upper level of said peripheral rim, said peripheral step protruding to the outside compared to the portion of said side wall therebelow;
- a plurality of first niches therein interrupting said peripheral step at intervals of constant width, which first niches grow narrower towards the bottom, the walls of said first niches originating at the upper level of said rim and extending to said bottom wall, said first niche-walls projecting towards the outside compared to the portion of said side wall below said peripheral step; and
- a plurality of second niches therein, each said second niche being disposed at half the interval between successive ones of said first niches, the walls of each said niche originating at the level of said peripheral step and extending to a level above said bottom, wherein said second niches grow narrower toward the bottom and have a floor closing the bottom thereof, the level of said floor being at or above the level of the food anticipated to be carried by the container.

4,201,302

METHOD AND APPARATUS FOR DIVIDING FAT AND LEAN MEAT

Eldon N. Roth, 99 Madera Ct., San Ramon, Calif. 94583

Filed Oct. 10, 1978, Ser. No. 949,760
Int. Cl.[2] B07C *5/342*
U.S. Cl. 209—577 **19 Claims**



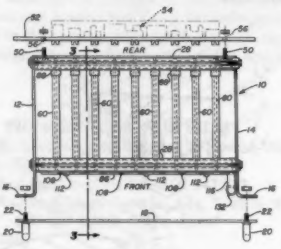
1. Apparatus for separating selected components of meat products, comprising
- means for extruding a combination of the components into a plurality of generally continuous chains of material,
- separation aparatus for dividing the components in each of said chains including
- means for sensing the presence of the selected components along the length of each chain, and
- means responsively coupled with said sensing means for diverting the respective components toward separate collection means.

4,201,303

CHASSIS FOR PRINTED CIRCUIT BOARDS

Jesse C. Smith, 12 Marian St., Waltham, Mass. 02154

Filed Oct. 3, 1978, Ser. No. 948,300
Int. Cl.[2] H05K *7/18*
U.S. Cl. 211—41 **20 Claims**



1. A chassis for printed circuit boards or cards comprising in combination, a pair of end plates of rectilinear shape having similar perforation patterns adjacent the corners thereof, extruded rails each having a pair of spaced channels therein extending equally between said end plates with the ends of said spaced channels in alignment with certain perforations in said patterns thereof, similar keys respectively adjacent each pattern of perforations and each having a hole therein and at least one prong extending through one perforation of each of said patterns thereof and into the end of one channel in the end of the rail adjacent each pattern of perforations, a self-tapping screw extending through the hole in each key and also through another perforation of each pattern and threaded into the end of another channel in the end of the rail abutting each pattern of perforations to secure said rails against turning about the

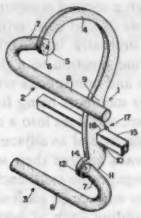
axes thereof, grooved guide members for said boards extending in opposed parallel pairs between opposite pairs of said rails in spaced relationship along said rails, and positioning means comprising projections respectively on the opposite ends of said guide members and interfitting with notches spaced along said rails to position said guide members at desired fixedly spaced locations along said rails and prevent relative movement between said guide members and rails in any direction.

4,201,304

AUXILIARY TOWEL HOLDER

June I. Wicklund, Rte. 1, Box 220, Grantsburg, Wis. 54840

Filed Mar. 1, 1978, Ser. No. 882,448
Int. Cl.[2] A47F 5/08
U.S. Cl. 211—87 **3 Claims**



1. A towel holder comprising a vertical main support having an upper and a lower end; said upper and lower ends each having parallel horizontally disposed arms thereon; each of said arms being positioned in a vertical plane different from the other and each being further disposed in a vertical plane different from that of the main support; said horizontally disposed arms being rebent upon themselves to a J-shaped configuration and pivotally supported proximal the J-shaped portion with the arms being adjustingly positionable toward and away from each other and the main support and extending laterally to each side of said main support.

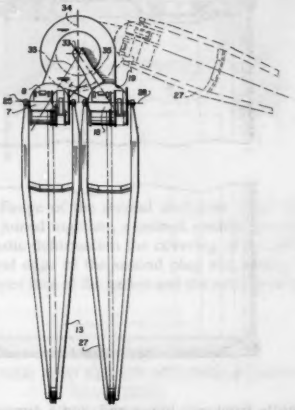
4,201,305

ROTATORY CRANE WITH PLURAL JIBS

Egon Frick, Lübeck, Fed. Rep. of Germany, assignor to Orenstein & Koppel Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 513,118, Oct. 8, 1974, abandoned. This application Jun. 10, 1976, Ser. No. 694,563
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1973, 2353954; Nov. 2, 1973, 2354975
Int. Cl.[2] B66C 5/02, 23/52
U.S. Cl. 212—47 **7 Claims**

1. A double slewing crane comprising, in combination, an upright support column having a substantially vertical central axis; a ring gear affixed to the upper end of said column concentric with said central axis; anti-tilt anti-friction bearing means including bearing race means affixed to said column concentric with said axis, first and second rotatable bearing races concentrically mounted with respect to each other and said central axis; anti-friction elements positioned between said fixed and rotatable bearing races; a first carrier affixed to said first rotatable bearing race and concentric with said central axis and including a first centilever portion projecting radially thereform; a second carrier affixed to said second rotatable bearing race below said ring gear and concentric with said central axis and including a second cantilever portion projecting radially therefrom; said carriers being adjacent each other and spaced axially along said column from each other; a first crane, including a first upright crane control and operating tower rigidly affixed to said first cantilever portion and extending both upwardly and downwardly therefrom; a second crane, including a second upright crane control and operating tower rigidly affixed to said second cantilever portion and extending both upwardly and downwardly therefrom; said first and second crane control and operating towers being offset equal distances radially from said central axis; a first jib mounted on said first tower for pivoting about a first horizontal axis on said first tower; a second jib mounted on said tower for pivoting about a second horizontal axis on said second tower; said first and second horizontal pivot axes being at equal distances radially from said central axis and at the same level vertically of said support column; a first drive means on said first tower including a first pinion meshing with said ring gear; a second drive means a said second tower including a second



pinion meshing on said ring gear, whereby said first and second towers and their associated jibs are independently rotatable about said vertical central axis of rotation; when said jibs are disposed in a parallel position relative to each other, equal and opposite obtuse angles are formed at the intersection of a first horizontal line connecting the center of a respective tower and said common axis and a second horizontal line extending between said first and second horizontal pivot axes, and an angle of substantially less than 90° is formed between said first horizontal line and a third horizontal line that extends from said common axis and perpendicular to said second horizontal line.

4,201,306

VARIABLE CAPACITY ALL-PLASTIC DRUM

Robert A. Dubois, and George F. Smith, both of Marion, Ohio, assignors to Greif Bros. Corporation, Delaware, Ohio

Filed Oct. 27, 1978, Ser. No. 955,352
Int. Cl.[2] B65D 25/00
U.S. Cl. 220—5 R **16 Claims**

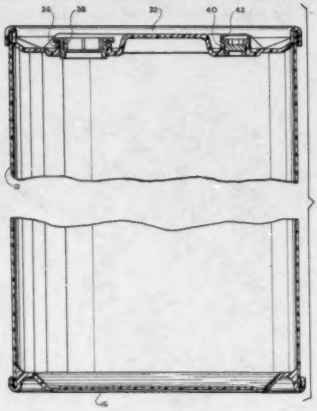
1. An essentiall all-plastic drum of selected capacity comprising in combination:

an extruded tube defining the drum side wall of selected diameter and length proportional to the drum capacity desired and having an open upper end and an open bottom end;

an injection molded bottom closure having an annular periphery assembled to the bottom end of the tube and defining a cavity therebetween, the bottom closure being welded to and closing the bottom end; and

the weld between the bottom closure and the bottom end being defined by an induction melted welding material disposed in the cavity that was induction-heated and melted and under pressure caused to conform to the configuration of the cavity to bond to and secure together surfaces of the tube and bottom closure, the welding material being thermoplastic initially in the form of preformed material and includes excitable means which when exposed to induction heating causing the melting of the thermoplastic which flows under pressure into the cavity

and when set forms an annular seal and causing the bonding by welding of the bottom closure to the tube, the bottom closure including a circumferentially extended peripheral apron mating and engaging with the inner surfaces of the bottom end of the tube, and that portion of the apron in the tube being in engagement substantially throughout with the inner surface of the tube, the apron having a lower end extending continuously beyond said bottom end and an annular flange extending radially outwardly from said lower end, and a circumferential skirt spaced from the exterior surfaces of the bottom end of the tube and extending upwardly from the flange and terminating in an inwardly extending annular flange disposed in sealing engagement with the exterior surfaces of the bottom end of the tube, with the apron, radial flange, skirt and inwardly extending flange cooperating with the bottom end of the tube in defining an L-shaped cavity for receiving the melted welding material when exposed to induction heating and pressure.

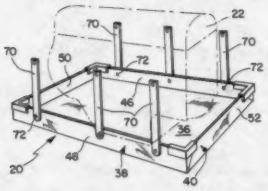


4,201,307

OIL COLLECTION RECEPTACLE

Frank H. Malloy, 19 Bragaw St., New London, Conn. 06320

Filed Mar. 23, 1979, Ser. No. 23,305
Int. Cl.[2] B65D *25/00, 5/24*
U.S. Cl. 220—62 **2 Claims**



1. A receptacle for collecting waste material in the form of oil and other liquids which drip from the underside of an engine comprising:

a sheet of semirigid plastic material in the form of a polygon having a plurality of outer edges defining its perimeter and a plurality of corners defining the limits of said outer edges, said sheet lying in a substantially flat plane, said sheet being impervious to the passage of liquids;

first lines formed in said sheet extending from one of said edges to another of said edges at a substantially constant distance inboard from each edge of said sheet, those portions of said sheet encompassed within all of said first lines being defined as a base, those portions of said sheet each bordering said base and encompassed within said first lines and one of said outer edges being defined as sidewalls, and those portions of said sheet in the regions of said corners each encompassed within said first lines and two adjacent ones of said outer edges being defined as corner members;

said base including a plurality of parallel spaced ribs formed on its surface for increasing its rigidity;

second lines formed in said sheet diagonally across said corner members extending from the intersection of each of said associated first lines to its associated said corner lying in the perimeter of said sheet;

each of said sidewalls having an inner surface and an outer surface and being foldable along its said associated first line between a first position substantially coplanar with said base through a second position lying in a plane transverse to the plane of said base, adjacent ones of said sidewalls lying in mutually intersecting planes when they assume the second position to a third position lying in a plane parallel to and contiguous with a plane of said base;

each of said corner members being foldable along said associated first and second lines into a contiguous relationship with said outer surface of an adjacent one of said sidewalls when said sidewalls assume their second positions;

retention means engageable with each of said corner members and an inner surface of each said associated sidewall for releasably holding each of said corner members in a contiguous relationship against its associated said outer surface when said sidewalls assume their second positions, thereby maintaining said sidewalls in their second positions, whereby said base, said sidewalls, and said corner members all together define a liquid tight vessel, said retention means including a fastener having first and second legs and a u-shaped bight connecting said first and second legs, said bight biasing said first and second legs toward one another, said fastener being selectively receivable over said sidewalls and said associated corner members when said sidewalls assume their second positions such that said first leg engages said inner surface and said second leg engages said corner member and holds it in a contiguous relationship against said outer surface, said inner and outer surfaces being roughened so as to have a sawtooth cross-section having successive troughs and ridges extending in a direction generally transverse to the direction of movement of said fastener as it is being applied to said corner members and said associated sidewall and wherein mutually facing surfaces of said first and second legs are similarly roughened such that said respective roughened surfaces are mutually engageable when said fastener is received in fitting relationship with its associated said sidewalls; and

a plurality of straps mounted on said sidewalls at spaced locations and extending beyond and transverse to said edges for suspending said receptacle beneath the engine.

4,201,308

WATER-BASED CONTAINER END SEALING COMPOSITIONS AND THEIR USE

Daniel L. Neumann, Waukegan, Ill., assignor to The Dexter Corporation, Windsor Locks, Conn.

Division of Ser. No. 785,332, Apr. 7, 1977, Pat. No. 4,138,384.
This application Jan. 6, 1978, Ser. No. 867,617
Int. Cl.[2] B65D *53/06*
U.S. Cl. 220—81 R **14 Claims**

1. In a container having at least one end connected and hermetically sealed to a body portion, the improvement being the use of a homogeneous, substantially solvent-free, set hermetic sealant composition substantially free of physical defects and blemishes, said sealant essentially consisting of

(a) synthetic, elastomeric, high molecular weight, acrylonitrile-butadiene copolymer having, on a weight basis, a predominance of butadiene,

(b) synthetic, elastomeric, high molecular weight, isobutylene-isoprene copolymer having, on a weight basis, a predominance of isobutylene, and

(c) small particles of compatible, thixotropic, mineral flow control agent,

the weight ratios of said acrylonitrile-butadiene copolymer, said isobutylene-isoprene copolymer, and said flow control agent being about 15.2 to 23.4::about 39 to 24.4::about 29.4 to 83.1, respectively.

4,201,309

TEST PLUG AND SEALING PLUG FOR CABLE FITTINGS

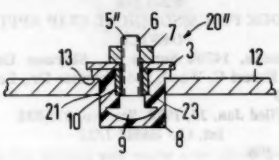
Josef Bauer, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,185

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810840

Int. Cl.[2] F16J *15/10*; B65D *39/12*

U.S. Cl. 220—235 **10 Claims**



1. A sealing device for closing a test opening in a wall of a cable fitting comprising a bolt-shaped pressure component having a disk-shaped rim at one end and threads at the other end; a ring-shaped sealing member consisting of an elastic material arranged on the pressure component, said disk-shaped rim having a diameter corresponding to the exterior diameter of the sealing member; a thrust washer telescopically received on the other end of the pressure component for engaging the sealing member; a thrust nut threadably received on the threads of the pressure component to urge the thrust washer against the sealing member to compress the sealing member between the washer and rim; and means for limiting the amount of threading of the thrust nut on the threads of the pressure component to limit the maximum amount of pressure applied to the sealing member, said means for limiting comprising a spacing shell being telescopically received on the threaded other end of the pressure component and being surrounded by a portion of the sealing member.

4,201,310

BIDIRECTIONAL JOINING DEVICE

Charles Glachet, Vendôme, France, assignor to La Calhene, Bezons, France

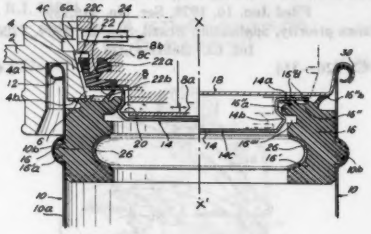
Filed Feb. 21, 1979, Ser. No. 13,667

Claims priority, application France, Feb. 24, 1978, 78 05331

Int. Cl.[2] B65D *51/28, 51/18*; F16J *15/32*

U.S. Cl. 220—256 **6 Claims**

1. A bidirectional joining device with an integral passage between a first enclosure having a flange serving as a seat for a first plug provided with a first gasket and a second enclosure having an opening, a second plug and a second gasket, whereby the first gasket is able to form the sealing between the first plug and the gasket and the first plug and the second plug when the latter are joined together, wherein the second enclosure has an opening provided with a lateral edge, the second plug has a peripheral edge perpendicular to the axis of the two plugs, a side wall having a convex portion and a bottom, the second gasket has an external lateral face, an internal lateral face and an upper face turned towards the outside of the second enclosure, said external lateral face being sealingly and not-detachably fixed to the lateral edge of the second enclosure, said inner lateral face having a first bead able to cooperate with the convex portion of the second plug to ensure the joining together of said second plug and the drum by locking the bead between the convex portion and the edge, said upper face being provided with an external annular contact area which is able to ensure by deformation sealing between the



drum and the flange of the second enclosure when the two enclosures are joined together, a second annular contact area ensuring by elastic deformation the covering of the periphery of the peripheral edge of the second plug and sealing means between the upper face of the gasket and the peripheral edge of the plug.

4,201,311

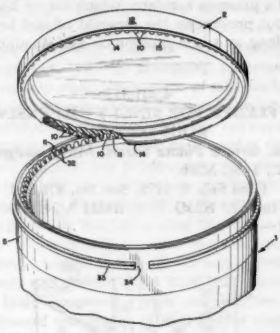
CONTAINER AND LID OF MOLDED PLASTIC MATERIAL

J. Larry Underwood, 104 Dixie Dr., Woodstock, Ga. 30188

Filed Jun. 21, 1978, Ser. No. 917,588

Int. Cl.[2] B65D *43/10*

U.S. Cl. 220—307 **10 Claims**



1. A container and lid of molded plastic material having a fastener structure integral with said container and lid to connect said lid onto said container, in which said lid has a peripheral channel facing the top edge of the wall of said container with the top edge of said wall in said channel, two peripheral series of similar complementary elements integral with the top edge of said wall and in said channel, each element being wider at its extremity in the peripheral direction than at its base adjacent its supporting member, so that the spaces between the elements are wider adjacent each of said members and are complementary to the elements, so that the interdigitated elements interlock against separation, the material of the members being sufficiently pliable for insertion and removal of at least one element from one series into space between elements of the other series when all remaining elements are interengaged, said elements of said two series having laterally inclined interengaging surfaces which act to apply force between said members radially of said container, said container and lid having continuous peripheral abutting surfaces and said later-

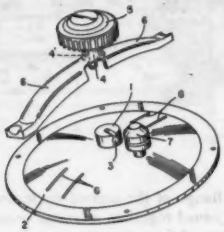
ally inclined surfaces on said elements applying force between said lid and container to press said abutting surfaces together tightly and seal said container.

4,201,312

PRESSURE COOKER CLOSURE FASTENING MEANS

Pedro Basile, Rua Pelotas, 183,, São Paulo, Brazil

Filed Jun. 16, 1978, Ser. No. 916,139
Claims priority, application Brazil, Sep. 26, 1977, 7706389
Int. Cl.² B65D *45/28*
U.S. Cl. 220—314 **4 Claims**



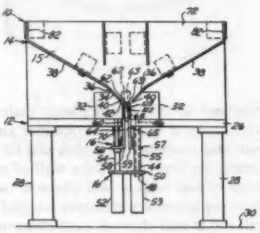
1. A closure for a pressure cooker comprising a lid, lid locking means and interfitting means attached to said locking means and arranged to be removably attached to said lid and means for preventing detachment of said interfitting means from said lid, said interfitting means including a key attached to said locking means and a lateral keyway formed at the center of the lid, said key engaging in said keyway, and said preventing means including a standpipe projecting up from said lid adjacent said keyway forming a vent passage through said lid and a pressure regulator which sits on said standpipe, said regulator preventing the removal of said key from said keyway as long as it is in position on said standpipe.

4,201,313

HOPPER FEEDER FOR SINGLY DISPENSING SHORT RODS OR TUBES

Jerry Kirsch, Grosse Pointe Farms, Mich., assignor to Auto-Place, Inc., Troy, Mich.

Filed Feb. 8, 1978, Ser. No. 876,019
Int. Cl.² B23Q *7/06*; B65H *3/24, 9/00*
U.S. Cl. 221—171 **4 Claims**



1. A hopper feeder for singly-moving short rod workpieces comprising

a supporting structure,

a workpiece-receiving hopper mounted on said structure and having spaced side walls and inclined downwardly-converging bottom walls defining a workpiece chamber with an elongated outlet opening disposed therebelow and a discharge opening disposed in spaced relationship thereto,

a pair of workpiece agitator members disposed side by side in spaced parallel relationship below said outlet opening and movable relatively to one another upward and downward in opposite directions past said outlet opening into and out of said workpiece chamber,

power-operated means for moving said workpiece agitator members upward and downward relatively to one another past said outlet opening,

a workpiece receiver mounted adjacent said hopper in alignment with said workpiece discharge opening,

a workpiece ejector mounted between said agitator members for substantially horizontal reciprocation between positions adjacent said outlet opening and said discharge opening respectively to push a single workpiece from said position adjacent said outlet opening to said position adjacent and through said discharge opening onto said workpiece receiver,

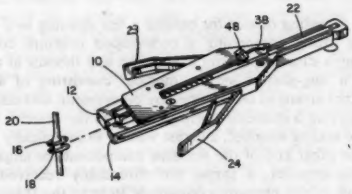
and power-operated means for reciprocating said workpiece ejector horizontally across said outlet opening in timed relationship with said power-operated means for moving said workpiece agitator.

4,201,314

CARTRIDGE FOR A SURGICAL CLIP APPLYING DEVICE

Peter B. Samuels, 14708 Sutton St., Sherman Oaks, Calif. 91403, and Ernest C. Wood, 2461 Ivanhoe Dr., Los Angeles, Calif. 90039

Filed Jan. 23, 1978, Ser. No. 871,532
Int. Cl.² B65H *1/12*
U.S. Cl. 221—198 **10 Claims**



1. A cartridge for supplying surgical clips to the jaws of a clip applicator comprising:

(a) a cartridge body having forward and rear ends and at least one clip channel for storing a plurality of said clips to be dispensed from said forward end to said jaws,

(b) means for forwardly urging said clips in said channel,

(c) means for selectively locking said urging means to prevent forward movement of clips in said channel, said locking means including a cam plate secured to said urging means for movement therewith, said plate having a recess provided in its lower portion, and a locking member pivotable between an unlocked position engaging a first portion of said cam plate and a locked position engaging a second portion of said cam plate and in which the locking member also engages the bottom of said cartridge, and

(d) manually operated means for moving said locking member between said locked and unlocked positions.

4,201,315

EMPTY HOPPER DETECTOR

David M. Chuss, and Benjamin H. Pinckney, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

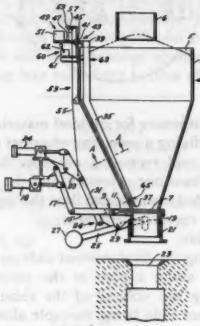
Filed Nov. 3, 1978, Ser. No. 957,514
Int. Cl.² F27D *3/00*
U.S. Cl. 222—66 **5 Claims**

1. In a batch charging hopper for granular material having a top charging opening, sidewalls converging downwardly to

form a bottom discharging opening, closure means for opening and closing said bottom discharge opening, an extension below said bottom discharging opening, and a movable drop sleeve telescoped on said extension, the improvement comprising:

(a) a pivotable probe arm extending downwardly within said hopper adjacent a portion of the interior of said side wall and terminating in a lower end adjacent said bottom discharge opening and an upper end spaced upwardly from said lower end;

(b) pivot means connecting said upper end and said side wall for permitting said probe arm to pivot back and forth within said hopper;



(c) means for locking said probe arm adjacent said sidewall when said hopper is empty and for unlocking said probe arm after said hopper has been filled, to permit pivoting of said probe arm as said hopper empties;

(d) biasing means connected to said upper end for causing said probe arm to pivot away from said sidewall during discharge of said hopper when said hopper is substantially empty; and

(e) electrical switch means activated by said probe arm for indicating when said hopper is empty.

4,201,316

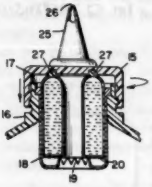
CAPSULE HAVING FRANGIBLE WALL PORTION

Richard J. Klingaman, Darien, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 665,758, Mar. 11, 1976, Pat. No. 4,088,246, which is a continuation-in-part of Ser. No. 571,886, Apr. 25, 1975, Pat. No. 3,966,089. This application Sep. 26, 1977, Ser. No. 836,767

Int. Cl.[2] B65D *51/22*

U.S. Cl. 222—80 **13 Claims**



1. A sealed capsule adapted to contain fluent material to be dispensed comprising an external cylindrical lower side wall portion, an external upper side wall portion symmetrical about the axis of said lower portion and decreasingly tapered to a closed reduced diameter top wall, and a bottom wall peripherally sealed to the side wall bottom edges, said side wall portions being relatively stiff and shape retaining, and said bottom wall being appreciably more frangible than said said wall portions, said bottom wall comprising a sheet of thin synthetic plastics material sufficiently strong to support the weight of the capsule contents but being readily puncturable for discharge of said contents.

4,201,317

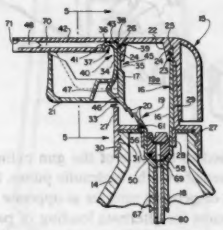
FINGER ACTUATED PUMP ASSEMBLY

Hans P. Aleff, Old Sneech Pond Rd,, Pole 188 - R.D. 2, Cumberland, R.I. 02864

Filed Jul. 28, 1977, Ser. No. 819,880

Int. Cl.[2] B67D *5/42*

U.S. Cl. 222—207 **6 Claims**



1. A manually operable pump for dispensing non-compressible liquid product comprising, a body, said body including container sealing means for forming a liquid tight engagement with a product container at one portion thereof and a product discharge means including a discharge opening at another portion thereof, an axially collapsible bellows having a plurality of integral wall segments, said bellows positioned in said body and forming a chamber for receipt of product from said container and subsequent dispensing thereof outwardly of said body, actuation means operatively associated with said bellows for at least partially axially collapsing said bellows, product discharge valve means supported by said bellows at one end thereof and communicating with said body discharge opening to norally seal such wherein collapsing movement of said bellows sequentially alters the position of said discharge valve means from said normally closed position to an open position and forces product within said chamber outwardly of said discharge opening, and valve means positioned at the other end of said bellows for directing product into said chamber upon expansion of said bellows wherein said product moves axially through said chamber from one end to the other, said bellows disposed in a generally horizontal axial disposition and having an outer face defining said one end thereof, said actuation means including a trigger forwardly extending from said outer face at a lower end thereof distal from said discharge valve means, said body cooperating with said bellows outer face whereby rearward movement of said trigger simultaneously arcuately pivots said lower end with respect to said upper end and at least partially collapses said bellows, said discharge valve means including an actuation arm extending along said bellows outer face and forwardly connected thereto at said lower end thereof, said body and said bellows outer face fixed in a position wherein rearward trigger movement moves said arm downwardly so as to displace said discharge valve means away from said body discharge opening.

4,201,318

PACKING INJECTOR GUN

Harold R. Adams, St. Francisville, Ill. 62460

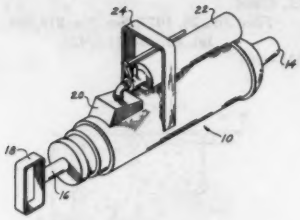
Filed Jun. 1, 1978, Ser. No. 911,380

Int. Cl.[2] B67D *5/42*

U.S. Cl. 222—324 **10 Claims**

1. A packing gun for injecting packing at high pressure through a nozzle, said packing gun comprising an elongated cylinder, a movable piston receiving packing on one side and a fluid under pressure on the other side, hydraulic pump means

for exerting pressure on said fluid, said means comprising a hydraulic pump mounted on said elongated cylinder and having a high pressure line communicating with said cylinder on said one side receiving fluid under pressure, said hydraulic pump being removably attached to the gun cylinder by a mounting plate, a U-shaped handle, said handle having leg



members attached to the side of the gun cylinder and a bight portion positioned above the hydraulic pump, the gun cylinder having packing dispensing nozzles at opposite ends of the gun cylinder and means for alternate loading of packing on opposite sides of the piston and alternate introduction of high pressure fluid on opposite sides of the piston.

4,201,319

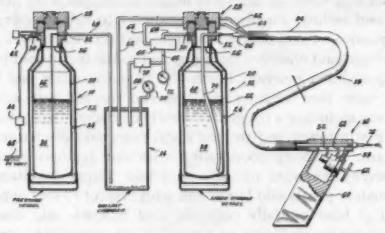
DISPENSING SYSTEM EMPLOYING LIQUID CRYOGEN

Joseph F. Andera, Trumbull, and Robert C. Eisenberg, Milford, both of Conn., assignors to Frigitronics of Conn., Inc., Shelton, Conn.

Continuation of Ser. No. 783,967, Apr. 4, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,816

Int. Cl.[2] B65D *83/14*

U.S. Cl. 222—396 **11 Claims**



1. A system for dispensing a liquid which comprises: a pressure vessel; a pressurizing liquid having a boiling point below ambient temperature contained within said pressure vessel and defining a vapor space thereabove; a ballast chamber having its interior in heat transfer relationship with the ambient atmosphere; a transfer conduit having a first end positioned within said pressure vessel below the normal level of pressurizing liquid therein and a second end positioned in said ballast chamber; a supply vessel containing therein a quantity of liquid to be dispensed; a liquid dispensing line having a first end positioned within said supply vessel below the normal level of liquid therein and a second, discharge, end at a liquid utilizatioon device; and means for selectively interconnecting the interior of said ballast chamber with the interior of said supply vessel to pressurize said supply vessel and dispense said liquid therefrom.

4,201,320

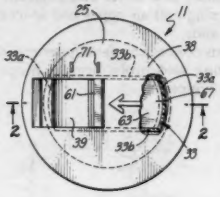
MEASURING DISPENSER

Lawrence C. Eppenbach, 419 Kennedy St., Juneau, Ak. 99801

Filed Aug. 25, 1978, Ser. No. 936,722

Int. Cl.[2] G01F *11/26*

U.S. Cl. 222—456 **13 Claims**



1. A measuring dispenser for divided material comprising:

first means for defining a receiving chamber of substantially fixed volume, said receiving chamber having an inlet whereby in at least one orientation of the measuring dispenser the divided material can flow through the inlet into a region of the receiving chamber;

a displacement slide;

means for mounting the displacement slide on the first means for movement along a path in the receiving chamber without varying the volume of the receiving chamber, said displacement slide being movable along said path so that the displacement slide can block at least a portion of said region from said inlet in at least one position of said displacement slide and can open at least a part of said portion of said region to said inlet in a second position of said displacement slide whereby the volume of said region available to receive the divided material from the inlet in said one orientation can be varied;

said receiving chamber having an outlet through which the divided material at said region can flow when the measuring dispenser is moved to a second orientation; and

said first means including an end wall having said outlet therein, said mounting means mounts the displacement slide to progressively open and close the outlet as the displacement slide is moved along said path.

4,201,321

APPLICATOR DEVICE FOR FLOWABLE REACTION MASSES

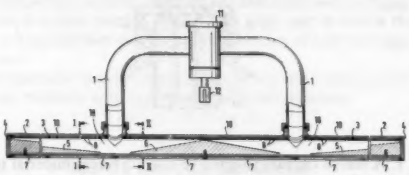
Heinrich Patzelt, Memmingen, and Horst Bokelmann, Bad Wildungen, both of Fed. Rep. of Germany, assignors to Metzeler Schaum GmbH, Memmingen, Fed. Rep. of Germany

Filed Jan. 24, 1978, Ser. No. 871,859

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1977, 2703680

Int. Cl.[2] B67D *5/06*

U.S. Cl. 222—478 **3 Claims**



1. Device for distributing a flowable, foamable reaction mass for producing polyurethane foam, the device having a crossbeam made up of two coaxial inner and outer tubes, comprising means for feeding the reaction mass to the crossbeam, an inner hollow chamber located within the inner tube of the two coaxial tubes, and an outer hollow chamber located between

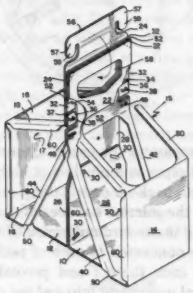
the inner and the outer tubes of the two coaxial tubes, said feeding means comprising at least one reaction mass feed line extending radially through said outer tube and said outer hollow chamber and terminating in said inner hollow chamber of said inner tube, wedge-shaped inserts disposed in said inner hollow chamber on opposite sides of the termination of said feed line for reducing the cross section of said inner hollow chamber, said wedge-shaped inserts being upwardly inclined in direction away from said feed-line termination, said inner tube being formed at a highermost location thereof with axially spaced overflow openings through which reaction mass fed to said inner hollow chamber is overflowable into said outer hollow chamber, said overflow openings increasing in cross section with increasing distance thereof from said feed line termination, said outer tube being formed at a lowermost location thereof with slot-like discharge openings for the reaction mass overflowing into said outer hollow chamber.

4,201,322

BOTTLE CARRIER

Kenneth Z. Crawford, Crawfordsville, Ind., assignor to Polycarrier Company, Crawfordsville, Ind.

Filed Apr. 18, 1978, Ser. No. 897,412
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 AB **42 Claims**



1. A carrier for bottles or the like in two rows of one or more per row, comprising

two bottom panels for supporting the bottoms of the bottles,

an outer face panel extending upward from the outer edge of each bottom panel and connected at the top to a top panel extending inward to a central position and having one or more bottle-receiving openings therein,

handle means above such central position,

center panel means to which the bottom panels are connected at their inner edges and which extends upward between the rows, said handle means being connected to said center panel means,

lift struts connected to the bottom panels at points spaced longitudinally of the bottle rows on such bottom panels and within the outer halves of the bottom panels, the struts connected to each bottom panel extending upward and inward across the center plane of the bottle row on such bottom panel and having their upper ends connected for lift by said handle means.

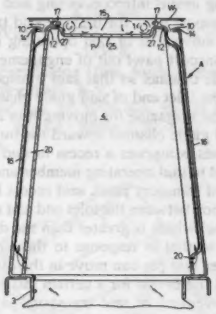
4,201,323

HIGH VELOCITY WEB FLOATING AIR BAR HAVING A RECESSED COANDA PLATE

Paul H. Stibbe, DePere, and Robert A. Daane, Green Bay, both of Wis., assignors to W. R. Grace & Co., New York, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,742
Int. Cl.[2] B65H *17/32*
U.S. Cl. 226—97 **3 Claims**

3. An elongated and generally tubular air bar adapted to be positioned closely adjacent a running web for supporting said web on a cushion of air, said air bar defining a pressurizable central chamber into which pressurized air is conducted and having means communicating with a pressurized air supply, said bar having a recessed plate with spaced apart outer portions having curved edges extending transversely of and located closely adjacent said web, said bar also having a pair of air supply slots, one located and extending along each of said curved edges, said slots being in air receiving communication



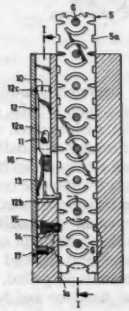
with said central chamber for receiving pressurized air therefrom, whereby pressurized air in said central chamber is discharged through said slots for impingement against said web to form a pressurized air cushion between said web and said plate, said plate having a central and inwardly recessed portion which is located inwardly of said slots and outer portions to define space in said pressurized air cushion for the generation of air turbulence, vortexes and eddy currents for increased heat transfer of material on said web and increased web floatation pressure.

4,201,324

ARRANGEMENT FOR TRANSPORTING A MAGAZINE THROUGH A SETTING DEVICE

Elmar Maier, Tisis, Austria, and Othmar Heeb, Ruggell, Fürstentum, Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Aug. 24, 1978, Ser. No. 936,593
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1977, 2738848
Int. Cl.[2] B25C *1/14*
U.S. Cl. 227—9 **9 Claims**



1. Setting device for driving fastening elements comprises a housing, means in said housing for driving the fastening elements, a guide channel in said housing having an inlet end and an outlet end and arranged to receive a belt-shaped magazine

holding fastening elements in spaced relation, and transport means within said housing for moving a magazine through said guide channel in a step-wise manner in the direction from the inlet end to the outlet end for aligning individual fastening elements held by the magazine in the path of said driving means, said transport means comprising a transport pawl for engaging and moving a magazine through said guide channel, and an operating member for moving said transport pawl in a reciprocating manner in the direction between the inlet end and outlet end of said guide channel, wherein the improvement comprises linking means interconnecting said operating member and said transport pawl for moving said transport pawl in response to the movement of said operating member and for pivoting said transport pawl out of engagement with a magazine in said guide channel so that said transport pawl can be moved toward the inlet end of said guide channel preparatory to re-engaging the magazine for moving it in a step-wise manner through said guide channel toward the outlet end thereof, said linkage means comprises a recess in said transport pawl, and a pin secured to said operating member and extending into said recess in said transport pawl, said recess having a dimension in the direction between the inlet end and the outlet end of said guide channel which is greater than the diametral dimension of said pin so that in response to the movement of said operating member said pin can move in the direction between the inlet end and outlet end for a certain distance before commencing the movement of said transport pawl in the same direction, said recess having a surface in contact with said pin as said pin moves through said recess in the direction toward the inlet end of said guide channel so that the initial movement of said pin along the pin contact surface in said recess causes said transport pawl to pivot out of engagement with the magazine before said pin commences the movement of said transport pawl toward the inlet end of said guide channel.

4,201,325

FASTENING ELEMENT SETTING DEVICE

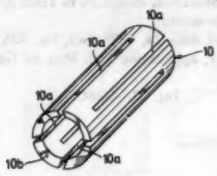
Peter Jochum, Meiningen, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Oct. 12, 1978, Ser. No. 950,545

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746120

Int. Cl.[2] B25C *1/18*

U.S. Cl. 227—9 **4 Claims**



1. Explosive power operated gun-like setting device for driving fastening elements, such as bolts, nails and the like, into a hard receiving material, such as steel, concrete and the like, comprising a housing forming an axially elongated opening from which the fastening elements can be expelled, an axially extending barrel positioned within the opening in said housing and the axis of the barrel being substantially in parallel relation with the axis of the opening, an axially extending holding member located within the opening in said housing and positioned between said barrel and the end of the opening from which the fastening element is propelled, said holding member being slotted in the axial direction and being radially expandable against the inherent tension of said holding member for holding a fastening element before it is driven from the housing, the axis of said holding member being in substantially parallel relation with the axis of said barrel, wherein the improvement comprises that said holding member is an open ended sleeve-like member having a plurality of axially extending slots spaced angularly apart around said sleeve-like member, each of said slots extending for a portion of the axial length of said sleeve-like member and adjacent said slots each extend from a different end of said holding member.

4,201,326

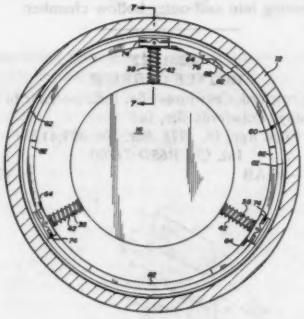
PIVOTAL BACK-UP PADS FOR WELDING

Talbert D. Connell, Spring, Tex., assignor to Crutcher Resources Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 892,945, Apr. 3, 1978, Pat. No. 4,165,831. This application Jul. 19, 1978, Ser. No. 926,024

Int. Cl.[2] B23K *5/22*

U.S. Cl. 228—50 **11 Claims**



1. A back-up pad apparatus for use in externally welding a joint between ends of pipes in a pipeline, which comprises:

a plurality of arcuate back-up pads having curvatures complementary with the interior surfaces of the pipes to substantially span the inside circumference of the joint;

support shoe means connected to each of said back-up pads intermediate the ends thereof and pivotally supporting said pads for radial movement into and out of engagement with the interior surfaces of said pipes at the joint;

means for biasing each of said back-up pads for pivotal movement in the same direction; and

means for selectively effecting radial movement of said support shoe means and the back-up pads supported thereon.

4,201,327

METHOD OF PRODUCING A LAMINAR CONTACT MATERIAL INCLUDING A LAYER OF SILVER AND A METAL OXIDE DISPERSED THEREIN

Ulf O. Harmsen, Pforzheim, Fed. Rep. of Germany, assignor to Dr. Eugen Dürrwächter Doduco, Pforzheim, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,708

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725328

Int. Cl.[2] B23K *31/02*; H01R *9/04*

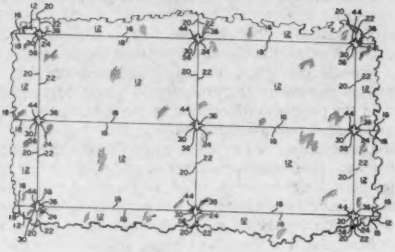
U.S. Cl. 228—176 **6 Claims**

1. In a method of producing a laminar, solderable contact material in which a first layer of silver or of an alloy of silver not substantially less resistant to atmospheric oxidation than silver is clad by hot rolling with a second layer or an alloy of silver with an oxidizable metal, and the compound material so obtained is exposed to an oxygen-bearing atmosphere at elevated temperature until said metal is converted to the oxide, the improvement which comprises said second layer being a casting in the metallographic as-cast condition and being produced prior to said hot rolling by continuous casting.

4,201,328
CONTAINER AND SIDEWALL BLANK THEREFOR

George E. MacEwen, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 31, 1979, Ser. No. 8,148
Int. Cl.[2] B65D 3/04
U.S. Cl. 229—4.5 38 Claims



1. A container sidewall blank comprising:

a piece of sheet material having a top edge, a bottom edge, a first side edge, and a second side edge;

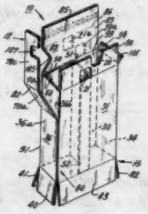
a first corner edge extending between said top edge and said first side edge, said first corner edge being generally straight through at least a portion of its full length and intersecting said top edge at a first included obtuse angle and intersecting said first side edge at a second included obtuse angle; and

a second corner edge extending between said top edge and said second side edge, said second corner edge comprising a first convex arcuate edge portion tangentially intersecting said top edge, and a first additional edge portion extending from said first convex arcuate edge portion and intersecting said second side edge at an angle in the range from about 45 degrees to about 135 degrees.

4,201,329
DOUBLE CELL SLIDE DISPENSER

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 22, 1979, Ser. No. 22,735
Int. Cl.[2] B65D 5/72
U.S. Cl. 229—17 SC 6 Claims



1. A reclosable dispensing carton made of a single sheet of carton blank and comprising a plurality of elongated tubular enclosures including first and second side panels and first and second end panels for said enclosures; said enclosures extending in the same plane at the upper and lower ends thereof and a common closure for said pair of enclosures;

said enclosures being closed by a single flap at one end and a second overlapping flap, the said flaps extending from opposite walls of said carton;

a pair of sets of apertures in each of said closure flaps each set of apertures registering with one of said enclosures;

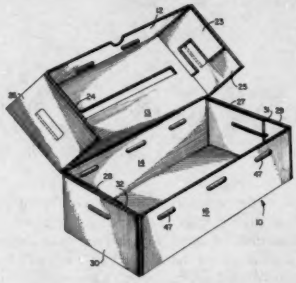
a movable closure tab extending from a side wall of said carton, said closure tab being provided with an aperture;

said closure tab aperture being arranged on movement of said closure tab parallel to the upper end of said enclosures to register selectively and successively with one of the sets of aligned openings for one enclosure then one of the sets of aligned openings for the second enclosure and then with neither of said sets of aligned openings in order to seal the said carton.

4,201,330
HINGED COVER CONTAINER WITH HAND HOLE LOCK

Earl F. Gilbert, Farmington Hills, Mich., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 11, 1979, Ser. No. 29,251
Int. Cl.[2] B65D 5/00, 5/22
U.S. Cl. 229—33 6 Claims



1. A blank of corrugated paperboard or the like, useful for making a hinged cover container with integral handholes and handhole locks comprising:

(a) a front cover panel, top cover wall, rear wall, bottom wall and front wall connected together in series by separated and parallel fold lines;

(b) a first pair of end cover flaps foldably attached to the ends of said front cover panel;

(c) a second pair of end cover flaps foldably attached to the ends of said top cover wall;

(d) a plurality of end wall flaps foldably attached to the ends of the rear wall, bottom wall and front wall respectively;

(e) a pair of handhole cut outs with integral locking tongues located substantially centrally of each of said second pair of end cover flaps;

(f) a pair of access cut outs located in the ends of said first pair of end cover flaps; and,

(g) a plurality of locking tongue receiving slots located in the ends of the end walls connected to said rear wall and front wall and substantially centrally of the end walls connected to said bottom wall.

4,201,331
BUTTERFLY CARTON AND BLANK FOR FORMING SAME

John J. Austin, Hinsdale, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 28, 1979, Ser. No. 24,877
Int. Cl.[2] B65D 5/10, 43/14
U.S. Cl. 229—39 R 10 Claims

1. A butterfly top carton of generally tubular configuration having a recloseable top portion comprising:

a generally rectangular, tubular side wall including alternatively hingedly connected side panels and locking side panels, each said locking side panel including an irregular V-shaped slot disposed in the upper portion thereof, said

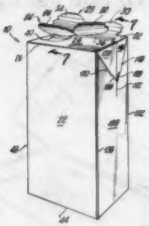
V-shaped slot defining a plurality of angled tabs to maintain said top portion of said carton in the closed condition;

a bottom panel connected to said side wall;

two top panels, each respectively hingedly connected along a bottom edge thereof to the top edge of a side panel;

two butterfly tabs, including hingedly connected first and second wing segments, each said first wing segment being hingedly connected to a top panel along a line generally orthagonal to the hinged connection between said first and second wing segments, and with each said top panel further including buttressing tabs disposed along the edge thereof adjacent the hinged connection with the associated first wing segment and abutting the first wing segment associated with the opposed top panel; and

two locking top panels of generally triangular configuration and including an inner and an outer layer, with the base



portion of each respective inner layer being hingedly connected to the top edge of a locking side panel and with the base portion of each respective outer layer being hingedly connected to the aligned side edges of said top panels, each of said locking side panels being formed of three overlapping, hingedly connected, generally triangular sections whereby, in the closed condition of the carton, each locking top panel is coplanar and interengaged with the associated locking side panel, with a portion thereof extending through said V-shaped slot and internally of said locking side panel for maintaining said top portion in a locked condition, and the butterfly tabs are interengaged such that each said butterfly tab overlies the opposed top panel, and is maintained at an angle relative to the top of the carton by said buttressing tabs abutting the first wing segments thereby providing a secondary locking of the carton.

4,201,332

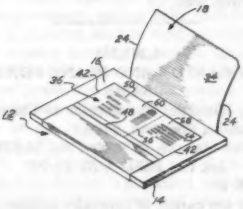
MAILING WRAPPER

Richard L. Wooten, St. Louis, Mo., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 12, 1978, Ser. No. 909,514

Int. Cl.[2] **B65D** *65/10, 65/14, 65/28*

U.S. Cl. 229—92 **5 Claims**



1. An improved mailing wrapper which is adapted to be wrapped about a magazine and the like during the mailing thereof, which may also be utilized to transmit information, such as a subscription renewal order notice and a business reply envelope, to solicit and facilitate the renewal of the subscription of the magazine and which is constructed and arranged such that the improved mailing wrapper and the magazine may still be permitted to be mailed at second class publication postal rates, comprising:

a first sheet adapted to be wrapped about the magazine while the same is being sent through the mails, the first sheet having an inside face adapted to be disposed adjacent to the magazine when the first sheet is wrapped about the magazine, an outside face, a first end, a second end, side edges extending between the first and second ends, a pre-selected width, extending between the side edges, and a pre-selected length extending between the first and second ends, with the pre-selected length being greater than the peripheral dimension of the magazine when the magazine is positioned for mailing;

a first perforation line formed in the first sheet and extending from one side edge to the other side edge of the first sheet for permitting the recipient of the magazine to manually sever the first sheet along the first perforation line, the first perforation line being spaced from the first and second ends of the first sheet and being spaced more closely adjacent the first end than the second end;

a second sheet for providing information to the recipient of the mailed magazine, the second sheet having an inside face, an outside face, a first end, a second end, side edges extending between the first and second ends, a pre-selected width that is no greater than the pre-selected width of the first sheet, and a pre-selected length that is less than the peripheral dimension of the front cover of the magazine when the magazine is in position for mailing;

means for securing the first end of the second sheet to the first sheet between the first end of the first sheet and the first perforation line so that the first ends of the first and second sheets are substantially aligned, so that a portion of the second sheet, remote from the first end of the second sheet, may be moved, with respect to the first sheet, about the first end of the second sheet, so that the second sheet is disposed between the side edges of the first sheet, so that the inside face of the second sheet is adjacent to the magazine, so that the outside face of the second sheet is adjacent to the inside face of the first sheet, and so that the second end of the second sheet is spaced from the first ends of the first and second sheets and from the second end of the first sheet; and

a second perforation line formed in the second sheet and extending from one side edge to the other side edge of the second sheet for permitting the recipient of the magazine to separate at least part of the portion of the second sheet from the first end of the second sheet, the second perforation line being disposed between the first perforation line and the first end of the second sheet when the first and second sheets are wrapped about the magazine and when the inside face of the first sheet and the outside face of the second sheet are disposed adjacent to each other.

4,201,333

FARE COLLECTION APPARATUS

G. Robert Oslin, Chicago, and Clarence Seamans, Elk Grove Village, both of Ill., assignors to Qonaar Corporation, Elk Grove Village, Ill.

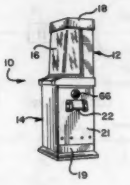
Filed May 24, 1978, Ser. No. 909,275

Int. Cl.[2] **G07B** *15/00*

U.S. Cl. 232—7 **22 Claims**

1. In an apparatus for receiving currency including a housing having a deposit section, a box for holding the currency, a recess in the housing for removably receiving the box, passage means for the currency defined between said deposit section and said recess, and entry means defined by the box adapted for communication with said passage means, blocking means for closing said entry means, lock means holding the blocking means in blocking position to prevent access to said box, and lock operating means for unlocking paid lock to enable move-

ment of said blocking means from blocking position when the box is positioned within said recess, the improvement wherein said passage means comprise at least two passages for separately receiving bills and coins, said entry means comprising separate openings defined by the box, said blocking means comprising a horizontally movable plate, said plate being movable between positions covering said openings and exposing said openings, a rack secured to said plate, a shaft supported by said box, and a gear mounted on said shaft, said gear engaging said rack whereby rotation of said shaft operates to move said



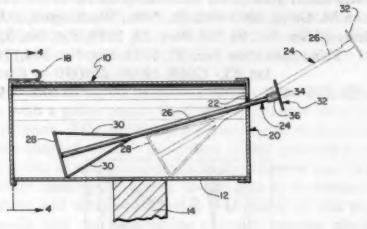
plate, movement of said plate providing communication of one passage with one opening and the other passage with the other opening, and compartments defined within said box, each opening communicating with a separate compartment whereby the bills and coins are separated within the box, said lock means comprising first and second locks associated with said shaft, a first key positioned within said recess for engagement with one lock at one end of said shaft when the box is received within said housing, and a second lock positioned at the other end of said shaft and exposed on the exterior of said box.

4,201,334

SIGNAL AND RECEPTACLE COMBINATION

John W. Janik, 40 S. Tyler St., Beverly Hills, Lecanto, Fla. 32661

Filed Sep. 12, 1978, Ser. No. 941,684
Int. Cl.² A47G *29/12*
U.S. Cl. 232—34 **2 Claims**



1. In combination of a receptacle and a signal device for automatically indicating the presence of an article within the receptacle, comprising in combination:

a bottom, top and side walls defining an inner volume of the receptacle;

a first end of the receptacle being adapted for inserting the article into the receptacle;

an end wall secured to the second end of the receptacle;

an aperture disposed in said end wall of the receptacle and located approximate the upper portion of the end wall;

a signalling member comprising a plate-like abutment member supported on the bottom of the receptacle;

a substantially rigid rod having a first end secured to said abutment member and extending through said aperture in said end wall of the receptacle;

an indicator disposed on a second end of said rod for movement in accordance with the abutment member;

means establishing the length of said rod and the position of said aperture in said end wall of said receptacle enabling said indicator to be disposed below the top of said receptacle when the abutment member is moved in the extreme position toward the first end of the receptacle indicating the absence of the article within the receptacle; and

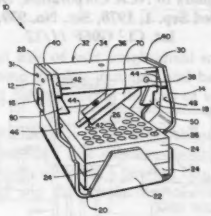
said indicator being disposed above the top of the said receptacle upon movement of the abutment member from the first end toward the second end of the receptacle in response to the movement of the abutment member by the depositing of an article within the receptacle.

4,201,335

MICROTEST PLATE CARRIER OVERSPEED PROTECTION DEVICE

Thomas E. Conn, Palo Alto, and John R. Edwards, Mountain View, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 5, 1978, Ser. No. 912,699
Int. Cl.² B04B *7/06*
U.S. Cl. 233—26 **6 Claims**



1. A carrier assembly for pivotal mounting on a centrifuge rotor, said assembly comprising:

a frame for holding fluid samples, said frame being designed to operate below a specified force field; and

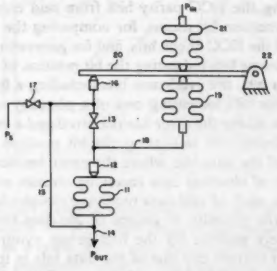
means connected to said frame and responsive to a force field greater than said specified force for automatically locking said fluid samples within said frame to prevent reuse of said carrier.

4,201,336

FLUIDIC SQUARE ROOT EXTRACTOR

Richard C. Mott, Harwood Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 729,511, Oct. 4, 1976, abandoned. This application Oct. 11, 1978, Ser. No. 950,335
Int. Cl.² G06M *1/12*; G05D *15/00*
U.S. Cl. 235—200 WB **31 Claims**



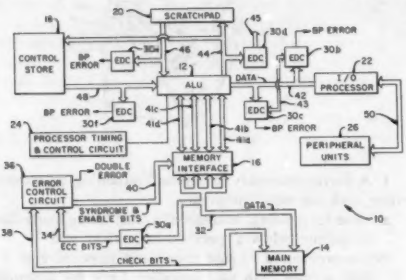
1. A fluidic square root extractor comprising:

first input terminal means for connection to a source of main pressure;
output terminal means for supplying an output pressure;
second input terminal means for receiving an input pressure the square root of which is to be extracted;
first connecting means for connecting said first input terminal means to said output terminal means;
amplifier means connected to said first connecting means and to said second input terminal means for generating said output pressure as a function of said input pressure, said amplifier means having a feedback means;
squaring means connected to said first connecting means for providing a feedback pressure as a function of the square of said output pressure; and,
second connecting means connected to said squaring means and said feedback means for supplying said feedback pressure to said feedback means,
whereby said output pressure is a function of the square root of said input pressure.

4,201,337
DATA PROCESSING SYSTEM HAVING ERROR DETECTION AND CORRECTION CIRCUITS

Wayne J. Lewis, Escondido, and William P. Ward, Poway, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 1, 1978, Ser. No. 939,298
Int. Cl.[2] G06F *11/12*
U.S. Cl. 371-37 13 Claims

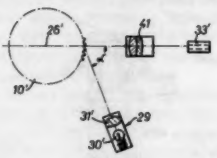


1. In a data processing system having a data bus carrying a plurality of data bits from a first location in the system to a second location in the system:
error detection and correction bit means for providing a plurality of error correction code (ECC) parity bits in response to the receipt of the data bits from said data bus, said error detection and correction bit means including means for logically combining predetermined ones of the data bits in order to provide each of the ECC parity bits;
error control means for receiving a plurality of ECC check bits associated with the data bits from the first location, for receiving the ECC parity bits from said error detection and correction bit means, for comparing the ECC parity bits and the ECC check bits, and for generating a plurality of syndrome bits indicating the bit position of any error in the data bits, the syndrome bits including a first group of syndrome bits indicating one of a plurality of groups of data bits where the error has occurred and a second group of syndrome bits indicating the bit position within one group of the data bits where the error has occurred; and
a plurality of identical data receiving circuits at the second location, each of said data receiving circuits for receiving one of the plurality of groups of the data bits and being selectively enabled by the first group syndrome bits in order to correct any one of the data bits in its associated group of the data bits, said data receiving circuits each including identical bit decoder means for receiving the second group of syndrome bits.

4,201,338
MOLD IDENTIFICATION

René Keller, Wettswil, Switzerland, assignor to Emhart Zurich S. A., Zurich, Switzerland

Continuation-in-part of Ser. No. 805,244, Jun. 9, 1977, abandoned. This application May 23, 1978, Ser. No. 908,605
Claims priority, application Switzerland, Jun. 14, 1976, 7512/76; May 25, 1977, 6424/77
Int. Cl.[2] G01N *21/16*; G01D *21/04*; G06K *7/10*
U.S. Cl. 235—454 14 Claims

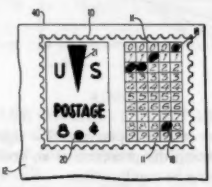


4. An apparatus for identifying a mold in which a vessel made from an optically transparent material has been molded, said vessel being provided with marks disposed about a path on the wall of the vessel, there being a first set of marks disposed above said path and a second set of marks being disposed below said path, one of said first or second sets of marks containing code marks and the other set containing timing marks, said apparatus comprising:
means for illuminating said marks;
means for moving the vessel past said illuminating means;
reading means including means for reading the incident light reflected by said code marks and means for reading the incident light reflected by said timing marks and means for converting the increase in illumination caused by the presence of a mark into an electrical signal; and
means for generating time impulses in response to the reading of incident light reflected by said timing marks for sequential reading of the incident light reflected by said code marks.

4,201,339
ARTICLE SORTING APPARATUS AND METHOD

Damon M. Gunn, 4007 49th St., NW., Washington, D.C. 20016

Division of Ser. No. 91,701, Nov. 23, 1970, Pat. No. 3,757,942. This application Jun. 27, 1973, Ser. No. 374,171
Int. Cl.[2] G06K *19/06*, *19/08*
U.S. Cl. 235—487 9 Claims

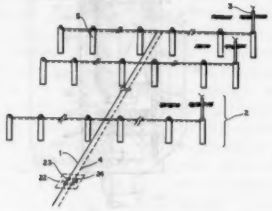


1. A postage stamp comprising a laminar body member, having means for securing same to a surface of a postal article,
means forming a grid on the outer surface of said laminar body member, said grid being adapted for receiving manually placed pattern of visible code markings,
grid locating means on the same surface as said grid and adapted to produce guide signals for subsequent orientation of said manually placed pattern relative to a reading station, and
said grid locating means comprising at least a pair of guide elements, one of which is an elongated geometrical shape.

4,201,340
METHOD OF AND A DEVICE FOR HYDRO-AUTOMATIC SPRINKLING WITH SINKING HYDRANTS

Vesselin Y. Georgiev, and Vladimir S. Mednikarov, both of Sofia, Bulgaria, assignors to Institute Po Mechanika I Biomechanika, Sofia, Bulgaria

Filed May 11, 1978, Ser. No. 904,922
Claims priority, application Bulgaria, May 12, 1977, 36270
Int. Cl.[2] A01G *25/16*
U.S. Cl. 239—66 2 Claims



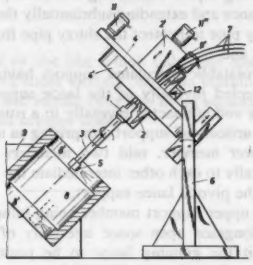
1. A ground-irrigation system comprising:
at least one row of hydrants recessed in the ground and having raisable and lowerable hydraulically displaceable sprinkler supports;
a main pipeline connected with all of said hydrants;
a respective hydroautomatic device at each of said hydrants for causing the sequential raising and lowering of the supports thereof, each hydroautomatic device including:
a respective vertical passage communicating between said main pipeline and the bottom of the respective hydrant,
a cylinder affixed to the respective hydrant and having its axis at 90° to the respective passage,
a piston shiftable in said cylinder, said piston being formed with a chamber of predetermined axial length,
a head movably received in said chamber,
a gate connected axially to said head for blocking and unblocking communication through said passage between said main pipeline and the respective hydrant, and
means communicating between said passage and one side of each of the cylinders upstream of said gate; and
an additional pipeline pressurizable independently of the main pipeline and communicating with the opposite sides of each of the cylinders, and
means formed along the periphery of the piston for cooperation with a guide means fixed to the cylinder to provide for rotation of the piston upon a plurality of strokes of said piston coupled with no movement of said gate and at least one stroke of said piston towards the opposite side of said cylinder causing movement of said gate to an unblocking position and subsequent return movement of said piston towards said one side of the cylinder causing blocking movement of said gate.

4,201,341
DEVICE FOR AUTOMATIC DEPOSITING BY WELDING

Erwin D. Hühne, Schallstadt, and Jochen H. Anders, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Castolin GmbH, Kriftel, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,290
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 7722908[U]
Int. Cl.[2] B05B *13/02*
U.S. Cl. 239—79 1 Claim

1. An apparatus for hard facing by powder flame spraying inner surfaces of bores of relatively large workpieces difficult to mount rotatably, such as Diesel engine blocks, and the like, said apparatus comprising,
a stand,
carriage support means pivotally mounted to said stand via holding means coupled to said stand and adapted to be adjustably inclined and to move vertically between a pair of supporting columns of said stand,
a carriage mounted on said carriage support means,
a burner assembly mounted to and extending transversely from said carriage,
said burner assembly comprising a burner mounting having a longitudinal member extending therefrom through which powder flame spray material is fed, said member terminating into a nozzle disposed transverse to the

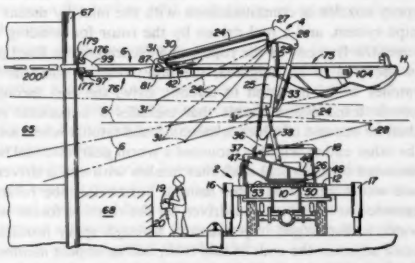


longitudinal axis of said longitudinal member, p2 said carriage being slidably mounted and having means for sliding said carriage along the axis of said longitudinal member,
said carriage in addition to being slidably mounted having means for rotating said carriage about the axis of said longitudinal member via a bearing ring, said longitudinal member and the nozzle thereof rotating with said carriage,
said bearing ring having guide rails cooperably associated with an eccentrically adjustable guide means for indexing said burner assembly and carriage along the carriage support means relative to bore to be sprayed.

4,201,342
MOBILE REFRACTORY APPARATUS FOR REPAIRING INTERIOR FURNACE WALLS

George H. Stram, Manchester, Pa., assignor to Weldon Hydraulics, Inc., York, Pa.

Filed Jun. 26, 1978, Ser. No. 919,129
Int. Cl.[2] B05B *9/00*
U.S. Cl. 239—128 18 Claims



1. A refractory gunning apparatus for repairing the interior refractory walls of elongated high temperature industrial ovens such as a coke oven, said apparatus being capable of repairing the innermost areas of the refractory walls and including a reciprocal gunning lance, a slurry pipe mounted rotatably internally of the lance and having a nozzle disposed

externally of the lance, a pivotal support for the lance, drive means for reciprocating the lance longitudinally relative to the lance support to advance the lance into and retract the lance from an oven and control means for positioning the lance and nozzle selectively relative to the interior of the oven, the improvement comprising

(a) an elongated gunning lance adapted to be advanced deep into an oven to locate the slurry nozzle substantially beyond the mid-point of the oven,

(b) internal support means for the lance to stiffen the lance against deflection when the lance is advanced into the oven,

(c) cooling liquid conducting means disposed internally of the lance and extending substantially the full length of the slurry pipe to protect the slurry pipe from the heat of the oven and

(d) a rotatable articulated support having an upper end connected pivotally to the lance support and having a lower end connected pivotally to a rotatable carriage,

(e) said articulated support comprising an upper member and a lower member, said two members being connected pivotally to each other intermediate the rotatable carriage and the pivotal lance support,

(f) said upper support member being bifurcated to provide an elongated open space internally of said member to permit the gunning lance to be positioned selectively intermediate the bifurcated components of said upper member.

4,201,343

SELF-PROPELLED IRRIGATION SYSTEM

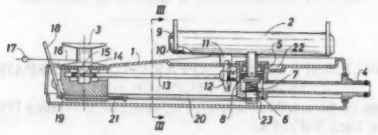
Eddie Stenild, Maglebo 11,, 2770 Kastrup, Denmark

Filed Jul. 7, 1978, Ser. No. 922,760

Claims priority, application United Kingdom, Sep. 2, 1977, 36675/77; May 30, 1978, 36675/77

Int. Cl.[2] B05B 3/06

U.S. Cl. 239—189 **4 Claims**



1. A self-propelled irrigation system including an irrigator having an inlet adapted to be connected to a water hose, a water-driven rotor rotatable about a vertical axis and having spray nozzles in communication with the inlet by means of a pipe system, and a reel driven by the rotor for winding up a rope, the free end of the rope being securable to a fixed point in the area to be irrigated, the improvement comprising: a ratchet wheel mounted to directly drive the reel through a power transmission means that includes a horizontal drive shaft on one end of which is mounted said ratchet wheel and on the other end of which is mounted a worm gear, said reel being mounted on a vertical shaft that meshes with and is driven by said worm gear, said rotor being a horizontal tube rotatably mounted at its centre and driven by the reactive forces when water is discharged in jet streams through spray nozzles located adjacent the ends of said tube; and an impact member in the form of a downward projecting lug located on said tube and spaced from the axis of rotation, said impact member located so as to successively strike a tooth of said ratchet wheel during the rotation of said rotor so as to rotate said ratchet wheel and said drive shaft by an angle corresponding to the tooth pitch by the action of said rotor transmitting thereto at least part of the energy accumulated during rotation.

4,201,344

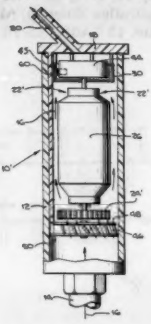
SHIFTABLE STATOR SPRINKLER HEAD

Leo J. Lichte, Riverside, Calif., assignor to The Toro Company, Riverside, Calif.

Filed Dec. 23, 1977, Ser. No. 864,016

Int. Cl.[2] B05B 3/16

U.S. Cl. 239—242 **16 Claims**



1. In a sprinkler head having a body adapted for connecting to a conduit supplying fluid under pressure and including a vaned turbine for rotating in response to fluid flowing through the body, motor means driven by the turbine, and a nozzle for directing the fluid emerging from the body adapted for rotation by the motor, the improvement for causing the nozzle to be repeatably rotated between a first point and a second point comprising:

(a) means for directing the fluid flow against the turbine being switchable between a first position where the turbine is rotated in one direction and a second position where the turbine is rotated in the opposite direction, said switchable directing means comprising

(a1) a first support structure having a plurality of first holes therein, being disposed in the body of the sprinkler head between the connection to the source of fluid under pressure and the turbine, whereby at least a portion of the fluid is directed through said first holes,

(a2) a second support structure having a plurality of second holes therein, being disposed in parallel-spaced relationship to said first support structure between said first support structure and the turbine, said first and second support structures being rotatable with respect to one another about a common axis between a first position and a second position, and,

(a3) a plurality of deflecting vanes disposed between said first and second support structures, being hingedly attached to said first support structure on one side and hingedly attached to said second support structure on the opposite side, said deflecting vanes being longer between said points of attachment to said first and second support structures than the spacing between said first and second structures, so that said deflecting vanes are angularly disposed between said first and second support structures whereby fluid entering said first holes is angularly directed out said second holes against the vanes of the turbine by said deflecting vanes, said deflecting vanes being movable as said first and second support structures are rotated with respect to one another between said first and second positions of a first angular position wherein the fluid is directed to rotate the turbine in one direction and a second angular position wherein the fluid is directed to rotate the turbine in an opposite direction; and,

(b) means responsive to the position of the nozzle for switching said switchable directing means at said first point and said second point whereby the motor is driven and thereby the nozzle is rotated between the first point and the second point by the repeated switching of said switch-

able directing means between said first and second positions.

4,201,345

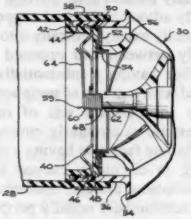
FOOD CUTTER FOR DISHWASHER

William D. Ziegler, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 4, 1978, Ser. No. 930,954

Int. Cl.[2] B02C *13/10*; F04D *29/70*

U.S. Cl. 241—46 R **10 Claims**



1. A rotary cutter comprising:

a rotary member;

means for rotating said member in a predetermined direction;

a cutter element driven by said rotary member, said cutter element comprising a wire form including a wound section, and further comprising an elongated cutter arm driven by one end of said wound section extending radially outward from said wound section;

said wound section received in concentric normally frictionally engaging relationship with a portion of said rotary member, with the direction of wind of said wound section being such that rotation of said cutter arm in said predetermined direction tends to cause said wound section to be radially expanded to reduce said frictional engagement upon contact of said cutter arm with articles introduced into said food cutter;

means for restraining relative rotation between the other end of said wound section and said rotary member;

whereby said means restraining said end portion of said wound section on said rotary member expands said wound section and releases said frictional interengagement upon restraint of said cutter arm to develop a predetermined torque level and whereby a clutch slipping action between said rotary member and said wire form is achieved.

4,201,346

DEVICE FOR CRUSHING SINTER AND THE LIKE

Erich Wiemer, Essen, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 811,686, Jun. 30, 1977, abandoned. This application Sep. 5, 1978, Ser. No. 939,746

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1976, 2632061

Int. Cl.[2] B02C *13/02, 23/18*

U.S. Cl. 241—66 **5 Claims**

1. A device for crushing sinter material and the like, comprising:

(a) a horizontal shaft rotatably mounted;

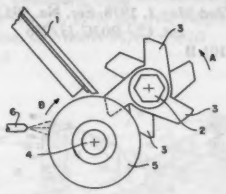
(b) a plurality of crusher arms spaced apart and fixed to said horizontal shaft;

(c) means for rotating said horizontal shaft;

(d) a horizontal axle freely rotatably mounted and positioned parallel to said horizontal shaft;

(e) a plurality of discs, disposed parallel to each other and spaced apart, fixed to said horizontal axle, said horizontal axle intersecting said discs through the central axle of said discs, said discs positioned, in relation to said crusher arms, to allow said crusher arms to move through said spaced apart relationship of said discs;

(f) an impact table disposed directly above and adjacent to said discs in a position sloped to absorb the impact of



sinter material or the like which falls onto said impact table and thence slides directly onto said plurality of said crusher arms, said impact table also being adjacent to said plurality of said crusher arms.

4,201,347

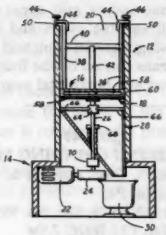
CREMATORY ASH GRINDER

B. Jack Elkin, Santa Clara, Calif., assignor to James D. McCampbell, Harbor City, Calif.

Filed Nov. 20, 1978, Ser. No. 962,131

Int. Cl.[2] B02C *7/12*

U.S. Cl. 241—92 **9 Claims**



1. A crematory ash grinder comprising

a vertically oriented cylindrical drum;

a grinding disk mounted coaxially relative to said drum and having a flat surface with multiplicity of apertures therethrough;

a bearing plate mounted coaxially relative to said drum above said grinding disk in spaced relationship thereto and having a downwardly facing flat bearing surface with a plurality of blunt protrusions extending axially a uniform distance therefrom and located across the expanse of said bearing surface;

adjustable means acting between said cylindrical drum and said bearing plate for varying the spacing therebetween;

a funnel positioned beneath said grinding disk for receiving ground ashes emanting through said apertures for collection in an urn located therebeneath;

drive means secured relative to said drum including an electric motor and speed reducing gears for slowly turning one of said grinding disk and said bearing plate in rotation relative to said drum; and

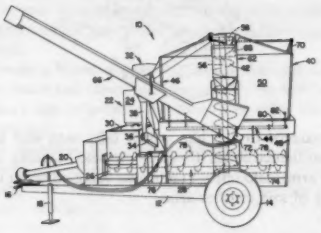
a rotation restraining means for immobilizing one of said bearing plate and said grinding disk from rotation relative to said drum.

4,201,348

FEED GRINDING AND MIXING APPARATUS

Marvin L. Bigbee, Ankeny; Harold R. Lindstrom, Des Moines, and Edward C. Ryan, Ankeny, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 1, 1978, Ser. No. 901,578
Int. Cl.[2] B02C *13/286*
U.S. Cl. 241—101 B **12 Claims**



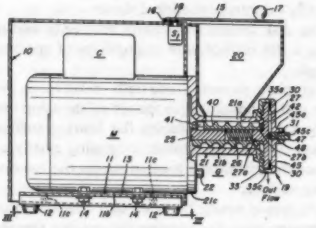
1. In a material-mixing apparatus comprising: a mobile frame; a mixing tank having upright end walls and side walls converging to a trough-shaped bottom; an upright auger conveyor adapted at its lower end portion to receive material from the bottom of said tank intermediate its end walls and convey it upwardly for discharge into said tank; a material-reducing unit having an outlet for transferring material to the mixing tank; a generally horizontal auger means carried within the tank for conveying material towards the upright auger, said auger means adapted to receive material from near each end wall of said tank and also along its length and convey said material towards the upright auger conveyor, said auger means carried between the end walls and above and along the bottom of the mixing tank, one end of said auger means projecting through one end wall and the outlet and into the material-reducing unit, for moving material from said unit into the tank; and powered drive means carried by the frame for driving said upright auger conveyor and horizontal auger means.

4,201,349

FOOD RETAILING GRINDING MACHINE

David E. Walsh, Fargo, N. Dak., assignor to General Nutrition Corporation, Pittsburgh, Pa.

Filed Nov. 13, 1978, Ser. No. 959,868
Int. Cl.[2] B02C *7/04*
U.S. Cl. 241—247 **15 Claims**



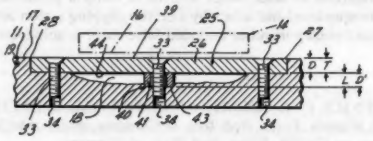
1. An improved apparatus for grinding food items such as nut kernels into a uniformly textured product which apparatus has a motor-driven shaft, a forwardly extending substantially cylindrical housing, a food advancing auger shaft secured to and extending from the driven shaft along said cylindrical housing for rotative actuation therewithin, a chute positioned above said cylindrical housing and open at its lower end therethrough to deliver food items on said auger shaft for forwardly advancing movement therealong, a front housing secured to and extending forwardly from a front end of said cylindrical housing and defining a radially extending food processing chamber therein, a pair of plate-like grinding heads each having a substantially planar grinding face, the grinding faces of said pair of heads being in an opposed operating position with respect to each other within said processing chamber, one of said pair of heads being mounted to project radially from the front end of said cylindrical housing, means securing the other of said heads in a forwardly positioned relation with respect to said auger shaft for rotative actuation thereby to effect relative rotational movement with respect to said one head, said one head having a centrally located inlet portion to receive food items being forwardly advanced by said auger shaft for introducing them substantially axially centrally into said processing chamber and radially between said opposed grinding faces, each said grinding face having a substantially planar central area portion provided with a group of peripherally widely and substantially equally spaced-apart sets of relatively coarse grinding teeth that extend as circularly curved line segments thereon, each said grinding face also having a rim-like group of finer teeth extending in circularly curved lines therealong adjacent the outer periphery thereof, open-end feed slot portions positioned in a substantially equally peripherally spaced-apart relation to extend outwardly across said group of finer teeth to separate them into relatively closely spaced-apart sets, said slot portions extending in an open-end relation between said planar central area portion to an outer peripheral edge portion of the associated said head for delivering finely ground food material from between said pair of heads into a radial outer portion of said processing chamber, means associated with said other head for thereafter advancing the food material across its outer periphery into a front portion of said processing chamber between said other head and said front housing, and said front housing having an outlet portion for delivering processed food material from the front portion of said chamber.

4,201,350

RECONDITIONED SAND MULLER

Jeffrey D. Eagens, Cincinnati, Ohio, assignor to Brunswick Industrial Supply Company, Cleveland, Ohio

Division of Ser. No. 808,361, Jun. 20, 1977, Pat. No. 4,126,922.
This application Sep. 13, 1978, Ser. No. 941,975
Int. Cl.[2] B02C *7/12*
U.S. Cl. 241—298 **5 Claims**



1. Re-conditioned sand muller structure wherein a previously formed generally circular wear path in a circular bottom of a sand muller's vessel is covered, said wear path being in the form of an irregular depth ring having an inner and an outer periphery, and said structure comprising:

a first annular seat in said bottom beyond the outer periphery of said wear path, and have a pre-determined depth;

a second annular seat in said bottom within the inner periphery of said wear path and having a pre-determined depth; said depths being equal and less than the maximum depth of said wear path;

a wear plate means disposed over said wear path, said wear plate means having outer and inner circumferences respectively corresponding to the circumferences of said first and second annular seats;

said wear plate means having a thickness approximately equal to the depth of said seats;

the respective circumferences of said wear plate means being seated in respective ones of said first and second seats; and, a bottom surface of said wear plate means overlying surfaces of said wear path and being spaced therefrom.

4,201,351

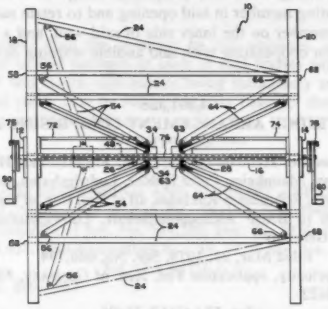
CUTTING STRETCHED INTERPLAYER SHEETING

Richard J. Tolliver, Greensburg, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 814,068, Jul. 8, 1977. This application Jun. 4, 1979, Ser. No. 45,561

Int. Cl.[2] B65H *19/20, 75/24*

U.S. Cl. 242—56 B **2 Claims**



1. Apparatus for cutting a series of individual sheet sof thermoplastic interlayer material of a preselected trapezoidal shape and of a preselected size from a continuous ribbon of said material comprising a mandrel having a first end member and a second end member, a central pipe interconnecting said end members, a plurality of radially extending arms attached in equiangular relation about each of said end members, the radial arms attached to said first end member being aligned with corresponding radial arms attached to said second end mbmer, each of said radial arms having a longitudinally extending groove, a peripheral arm interconnecting each of said radial arms attached to said first end member to said corresponding radial arm attached to said second end member, each peripheral arm having one end portion engaging the longitudinally extending groove of one of said radial arms attached to said first end member and another end portion engaging the longitudinally extending groove of the corresponding one of said radial arms attached to said second end member, a first adjustment housing indepdently mounted to said central pipe for axial movement along one portion of one side of the center of said central pipe, a second adjustment housing independently mounted to said central pipe for axial movement along another portion to the other side of the center of said central pipe, link means interconnecting each of said adjustment housings to an adjacent end of each of said peripheral arms, separate crank means operatively connected independently to each of said abutment housings for moving one or the other of said adjustment housings independently of one another, whereby the adjusted circumference at each end of said mandrel is adjustable independently of the adjusted circumference at the other end of said mandrel so that the mandrel may be adjusted to receive plies of plastic interlayer material having different lengths at their opposite longitudinal edges approximately equal to an integral number of lengths of the opposite side edges of sheets of trapezoidal shape to be cut from said continuous ribbon and can be readily adjustable to accommodate trapezoidal shapes having different lengths along their opposite longitudinal edges, and means associated with said mandrel for cutting said plies along at least one line in a plane that intersects said central shaft.

4,201,352

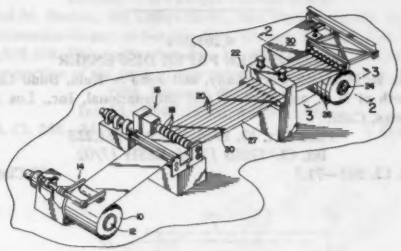
METHOD AND COMBINATION FOR WINDING STRANDS OF WEB MATERIAL HAVING VARYING THICKNESSES ON A TAKE-UP DRUM

John F. Madachy, Mayfield Heights, Ohio, assignor to Loopco Industries, Inc., Twinsburg, Ohio

Filed Sep. 25, 1978, Ser. No. 945,210

Int. Cl.[2] B65H *35/02, 23/10*

U.S. Cl. 242—56.2 **25 Claims**



1. A method for eliminating slack in one or more of a plurality of strands of web material being wound into coils on a take-up drum, where the strands have different thicknesses, comprising the steps of:

(a) connecting a portion of each strand to the drum so that rotation of the drum will cause the strands simultaneously to wind onto the drum;

(b) winding the strands onto the drum;

(c) connecting a portion of each strand to a previously wound portion of the same strand for forming a plurality of fixed diameter loops about the drum, the portion of each strand adjacent to the drum substantially conforming in size and shape to the outer surface of the drum;

(d) disconnecting the portion of each strand connected to the drum; and

(e) reducing the outer diameter of the drum an amount sufficient to cause the loops to slip relative to the drum when the drum is rotated and a predetermined tension is reached in the strands, the frictional force between the strands and drum causing the loops to rotate with the drum until said predetermined tension is reached.

4,201,353

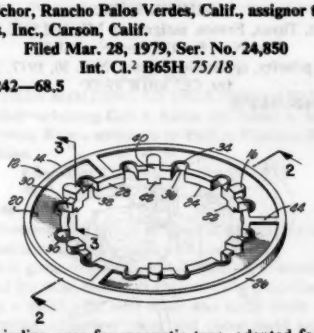
WINDING CORE FOR MAGNETIC TAPE ADAPTED FOR STACKING

S. Allen Schor, Rancho Palos Verdes, Calif., assignor to El Mar Plastics, Inc., Carson, Calif.

Filed Mar. 28, 1979, Ser. No. 24,850

Int. Cl.[2] B65H *75/18*

U.S. Cl. 242—68.5 **8 Claims**



1. A winding core for magnetic tape, adapted for stacking between like first and second sandwiching cores, comprising:

a substantially annular body having first and second substantially annular body surfaces, an outer circumferential body surface for winding the tape therearound, a discon-

tinuous inner circumferential body surface and a set of recess surfaces extending between said annular body surfaces and between portions of said discontinuous inner circumferential body surface, said recess surfaces defining a set of recesses for the core;

a set of projections rising from said first annular body surface, each for mating with a recess of the set of recesses of the first sandwiching core; and a set of projections rising from said second annular body surface, each for mating with a recess of the set of recesses of the second sandwiching core.

4,201,354

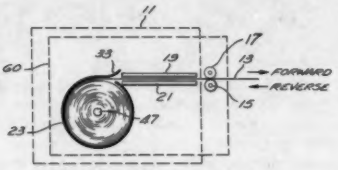
RELOADABLE PAPER DISPENSER

Felix R. Masiello, Parsippany, and John S. Kula, Budd Lake, both of N.J., assignors to AM International, Inc., Los Angeles, Calif.

Filed Oct. 13, 1978, Ser. No. 951,223

Int. Cl.[2] G03B *17/26*; B65H *17/02*

U.S. Cl. 242—71.7 **13 Claims**



1. Apparatus for dispensing and accumulating a driven web of selected rigidity and width without folding the web, the apparatus comprising:

enclosure means having a chamber defined therein and a shaft disposed in the chamber for storing the web thereon, said enclosure means having an opening of selected width disposed along the length of said enclosure means sufficient to accommodate passage of the web therethrough;

lid means pivotally affixed to the enclosure means and disposed over the opening and along the length of said enclosure means for preventing light from entering the enclosure means; and

guide means disposed proximate to the enclosure means for guiding the driven web through said opening and under the lid means, enabling said web to be dispensed from the shaft and be accumulated in the chamber and about said shaft without becoming folded.

4,201,355

FISHING REELS

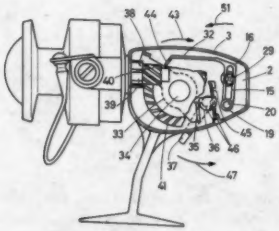
Jean Ruin, Thyez, France, assignor to Mitchell S.A., France

Filed Nov. 8, 1978, Ser. No. 958,949

Claims priority, application France, Nov. 30, 1977, 77 367881

Int. Cl.[2] A01K *89/00*

U.S. Cl. 242—84.1 R **8 Claims**



1. A fishing reel comprising a housing having a wall with a circular opening therein, an audible warning device in said housing,

an operating member having a pivot portion rotatably received in said opening, an operating portion outside said wall and a profiled portion inside said housing with a peripheral flange inwardly of said profiled portion, said profiled portion and flange being of a size to pass through said opening, and

a resilient member removably mounted on the inner side of said wall for angular movement about a pivot axis spaced from said opening, said resilient member having a first portion resiliently engaging said profiled portion of said operating member for angular movement of said resilient member upon rotation of said operating member and cooperating with said peripheral flange to retain said operating member in said opening and to retain said resilient member on the inner side of said wall, and a second portion cooperating with said audible warning device.

4,201,356

CARTRIDGE ARRANGEMENT COMPRISING AN ADAPTER

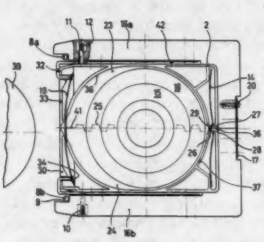
Klaus Schoettle, Heidelberg; Karl Uhl, Frankenthal; Heinrich Wittkamp, Mannheim; Peter Dobler, Ludwigshafen, and Helmut Lewin, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,784

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2712622

Int. Cl.[2] G11B *23/08*

U.S. Cl. 242—197 **8 Claims**



1. A cartridge arrangement for permitting a relatively small cartridge containing at least one pack of tape-like recording medium to be used on a recording and/or playback apparatus designed for use with a relatively large cartridge, each said cartridge comprising two sections, hinge means pivotally connecting said sections together, and an automatically releasable locking member, and said apparatus having pivoting means for causing said sections to be spread apart, said arrangement comprising: an adapter frame dimensioned on the inside to receive said relatively small cartridge, having outside dimensions generally corresponding to those of the relatively large cartridge, and being provided with means for retaining said small cartridge as well as means carried by said retaining means and cooperating with the relatively short locking member of said small cartridge for releasing said cartridge upon insertion of said cartridge into said frame.

4,201,357

FRAMEWORK FOR A BOX KITE

Harry N. Gambardella, 388 Main St., East Haven, Conn. 06512

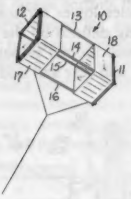
Filed Aug. 2, 1978, Ser. No. 930,533

Int. Cl.[2] B64C *31/06*

U.S. Cl. 244—153 R **5 Claims**

1. A box-type kite comprising first and second formed unitary polygonal end frames having corners, a plurality of struts

equal in number to said corners, flexible sails disposed about said struts intermediate the ends of the struts, strut receiving passages defined in said frames at each of said corners and subtending more than 180°, and having openings for insertion of said struts therein, said struts having a cross-sectional dimension greater than the openings to said passages, said struts received in said passages in each of said frames adjacent the ends of said struts, said frames being sufficiently resilient so that said struts may be inserted in said passages through said openings and held therein.



4,201,358

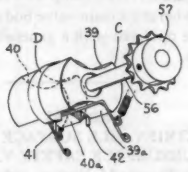
DOUGH DISPENSING AND SUPPORT APPARATUS

Jacob T. Nelson, 105 W. Lee Rd., Taylors, S.C. 29682

Continuation of Ser. No. 754,335, Dec. 27, 1976, Pat. No. 4,094,623. This application Apr. 18, 1978, Ser. No. 897,347

Int. Cl.[2] A47H *1/10*

U.S. Cl. 248—283 **3 Claims**



1. Apparatus for positioning and supporting a dough chamber and dispensing device and the like having a horizontal centerline and having a dispensing outlet disposable in close proximity above a cooking compartment of an associated food preparation appliance, said apparatus comprising:

first bracket means adapted for being affixed to a vertical stationary supporting surface;

a cantilevered support means extending outwardly from said bracket means in a generally horizontal manner;

a first pivotal connection between said first bracket means and said cantilevered support means providing generally lateral movement of said cantilevered support relative to said bracket means in a first generally horizontal plane;

second bracket means carried adjacent a free end of said cantilevered support means, mounting bracket means adapted for mounting to said dough chamber, a horizontal pivot connection connecting said second bracket means and said mounting bracket means providing pivotable movement of said dough chamber in a second generally vertical plane transverse to said cantilevered support means;

said horizontal pivot connection including a pivot point well above the centerline of said dough chamber enabling said dough chamber to be swung manually and returned to a vertical position in a self-returning manner avoiding the attendant risk of tipping and spillage;

a third pivotal connection connected between said cantilevered support means and said second bracket means providing pivotable movement of said dough chamber generally in a horizontal plane perpendicular to said second plane enhancing the maneuverability and positioning of said dough chamber adjacent the free end of said cantilevered support means; and

said dough chamber being pivotable about said horizontal pivotable connection to a raised position for clearing said associated appliance and subsequently pivotable to a lowered vertical position wherein said dispensing outlet is closely within said cooking compartment.

4,201,359

FABRIC-COVERED CHAIR RAIL

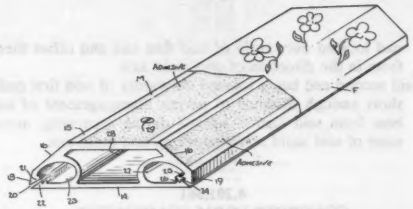
Floyd M. Baslow, 100 Lafayette St., New Bethlehem, Pa. 16242

Continuation-in-part of Ser. No. 680,703, Apr. 27, 1976, Pat. No. 4,018,260. This application Jan. 10, 1977, Ser. No. 758,203

The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.

Int. Cl.[2] E04F *19/02*; A47B *95/00*

U.S. Cl. 248—345.1 **7 Claims**



1. A fabric-covered chair rail for creating a horizontal waistline along the interior walls of a room or passage, said rail being constituted by pieces whose lengths are appropriate to the walls, each piece comprising:

a. a one-piece molding attachable to a wall and having upper and lower edges which are separated from a base to define therewith inlet jaws communicating with an internal storage channel running the full length of the molding, said molding being formed of extruded material having sufficient resilience to render said jaws dilatable, said base abutting said wall;

b. a replaceable band of fabric overlying the molding and conforming to the contour thereof, said fabric having upper and lower margins which initially extend beyond the edges of the molding, the fabric margins being inserted in said inlet jaws and being stuffed into said channels whereby the fabric fully covers the exposed portions of the molding and presents a smooth and attractive appearance; and

c. a layer of pressure-sensitive adhesive on said molding adjacent the upper and lower edges thereof to secure said fabric thereto.

4,201,360

INJECTION MOLDING OF EMBOSSED ARTICLES

James H. Schwartzburg; Eric A. Little, and Eddie A. Wilson, all of Lawrence, Kans., assignors to Packer Plastics, Inc., Lawrence, Kans.

Filed Jan. 27, 1978, Ser. No. 872,879

Int. Cl.[2] B29C *1/14*

U.S. Cl. 249—140 **5 Claims**

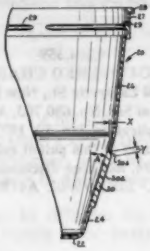
1. Unidirectional, injection molding apparatus for molding a thermoplastic article, said apparatus comprising:

inner and outer nondeformably rigid mold members supported for movement toward and away from one another along a mold axis, said inner and outer mold members presenting respective inner and outer mold surfaces inclined with respect to said mold axis and cooperating to present a space therebetween for receiving thermoplastic material to form a wall portion of the article;

an engraved area in said outer mold surface for receiving thermoplastic material to form a boss integrallly on said

wall portion in generally outward projection therefrom; and

a lead-in surface of said engraved area inclined with respect to said mold axis and having a first end adjoining said outer mold surface, said lead-in surface having a second



end located outwardly of said first end and offset therefrom in the direction of said mold axis,

said second end being located outwardly of said first end a short enough distance to permit disengagement of said boss from said lead-in surface during separating movement of said mold members along said mold axis.

4,201,361

CONCRETE FORM COMPONENT

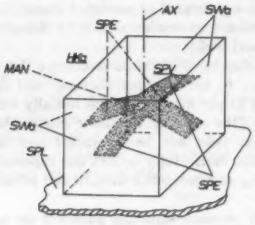
Herbert Küng, Untermättli 566, 8913 Ottenbach, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,246

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810287

Int. Cl.[2] F16M *11/14*

U.S. Cl. 249—183 **25 Claims**



1. A formwork component for use in concrete construction for the formation of a recess in a wall or ceiling, said component comprising a hollow body defining a central axis, said body having a resilient wall and at least one spreader mechanism adapted to adjust the shape of said hollow body to vary its cross-sectional dimensions, said resilient wall including at least one section bendable about an axis substantially co-planar with said central axis.

4,201,362

ELECTROMAGNETIC PILOT TYPE VALVE

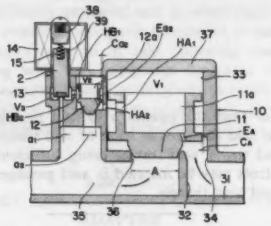
Ichiro Nishimi, Tokyo, and Hideaki Ōhira, Tokorozawa, both of Japan, assignors to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 921,052

Int. Cl.[2] F16K *31/02, 31/102*

U.S. Cl. 251—29 **4 Claims**

1. A generally compact multi-piston type electromagnetic pilot valve comprising a single valve housing, a pilot port, a main valve port, at least one auxiliary pilot port provided between said pilot port and said main valve port having diameters progressively smaller than that of said main valve port and gradually increased at a predetermined rate with respect to that of said pilot port, cup-shaped piston valves for opening and closing said main valve port and said at least one auxiliary pilot port, said piston valves including front, rear and inner lower surfaces, first passages for communicating and acting on the front and the inner lower surfaces of said piston valves, second passages being defined by the outer circumference of said piston valves, said second passages communicating and acting on said front, said rear and said inner lower surfaces of



said piston valves, and a plunger being provided to open and close said pilot port, a first auxiliary pilot port adjacent to said pilot port being opened and closed by at least one of said auxiliary piston valves while opening and closing said pilot port with said plunger, and said piston valves, said pilot port, said auxiliary pilot port, said main valve port and said plunger are disposed in parallel relationship with each other within said valve housing; whereby a main valve body of a generally large diameter may be operated with a generally small electromagnetic pilot valve.

4,201,363

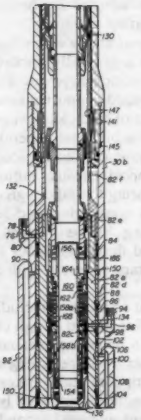
TUBING RETRIEVABLE SURFACE CONTROLLED SUBSURFACE SAFETY VALVE

Henry P. Arendt; Thomas M. Deaton, and Gary A. Kohn, all of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 17, 1978, Ser. No. 925,535

Int. Cl.[2] F16K *31/122;* E21B *33/00*

U.S. Cl. 251—62 **12 Claims**



1. A surface controlled subsurface safety valve comprising:

housing means for defining a flow path;

closure means for controlling flow through said flow path;

actuator means for controlling movement of said closure means and including:

operator means longitudinally movable with respect to said housing means and having a first position wherein said closure means prevents flow and a second position wherein said closure means permits flow,

fluid pressure responsive means for moving said operator means from said first position to said second position when affected by fluid pressurized at least to a selected value;

means for communicating control fluid between a control conduit and said pressure responsive means;

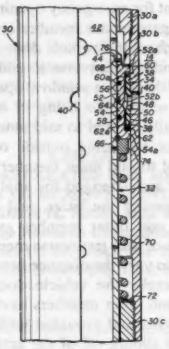
means for simultaneously moving said operator means to said second position and for preventing flow through said communicating means.

4,201,364

RADIALLY EXPANDABLE TUBULAR VALVE SEAL

Donald F. Taylor, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jul. 27, 1978, Ser. No. 928,362
Int. Cl.² F16K *3/18*
U.S. Cl. 251—175 **16 Claims**



1. A valve comprising:

tubular housing means for defining two regions;

said tubular housing means including a sealing surface facing one of said two regions;

said tubular housing means including lateral port means extending between said two regions and opening in said sealing surface;

mandrel means extending along said sealing surface;

tubular seal means carried by said mandrel means and expandable into engagement with said sealing surface and contractable away from said sealing surface;

said tubular seal means having one longitudinal extreme end on one side of said lateral port means and having its other longitudinal extreme end on the other side of said lateral port means;

pressure responsive means for expanding said tubular seal means into engagement with said sealing surface and formed between said mandrel means and said tubular seal means;

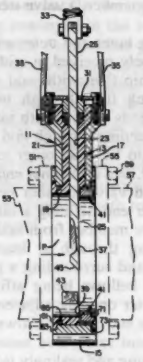
said tubular seal means including means for admitting fluid into said pressure responsive means from the other of said two pressure regions.

4,201,365

LINED GATE VALVE HAVING IMPROVED SEAT

George J. Paptzun, Portland; Collin C. Hall, Oregon City, and Benjamin B. Bullwinkle, Portland, all of Oreg., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,180
Int. Cl.² F16K *3/30*
U.S. Cl. 251—328 **8 Claims**



1. In a gate valve having a seat for engagement with a gate blade for shutting off flow through the valve,

said seat including a plastic layer having a seating portion defining an annular face for engagement with the blade and having a flow passage portion angularly related and integrally joined to said seating portion,

means defining a rigid back up structure for said layer,

said seat having a shear area constituted by the area of a band having a diameter equal to that of the exterior of said flow passage portion and a width equal to the thickness of said seating portion,

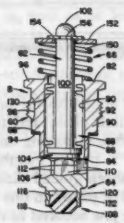
the ratio of said shear area to the area of said annular face being greater than 0.55 but less than 0.80.

4,201,366

BELLOWS VALVE

Oliver L. Danko, 12184 Heath Rd., Chesterland, Ohio 44026; Bernard J. Gallagher, 6665 Gates Mills Blvd., Gates Mills, Ohio 44040; Earl D. Shufflebarger, 6609 Berkshire Dr., Mentor, Ohio 44060; David M. Simko, 6467 Huntington Dr., Solon, Ohio 44139, and Edward E. Kish, 7380 Raccoon Hill, Kirtland, Ohio 44094

Filed Mar. 13, 1978, Ser. No. 886,031
Int. Cl.² F16K *41/10*
U.S. Cl. 251—335 B **30 Claims**



1. A bellows valve comprising in combination:

a valve body having a cylindrical passageway extending thereinto for defining a valve chamber, a valve seat disposed along said passageway having a fluid inlet commu-

nicating therewith on one side of said valve seat and a fluid outlet communicating therewith on the other side of said valve seat;

a bonnet portion associated with said valve body and including a bonnet opening coaxially disposed with said passageway;

a valve assembly receivable in said bonnet opening as a unit with a portion thereof extending into said valve chamber and adapted to selectively control fluid flow between said valve inlet and outlet, said valve assembly including an adapter, a valve member, a valve stem and an open ended hollow bellows;

said adapter having inner and outer ends and being dimensioned to be closely received in said bonnet opening in a sealing relationship therewith, said adapter including an opening extending therethrough between said adapter inner and outer ends coaxial with said valve chamber;

said valve stem extending through said adapter opening and being elongated to have an outer end spaced from said adapter outer end, said stem inner end including said valve member with said valve member being cooperable with said adapter inner end defining a maximum spaced position for said valve member from said valve seat;

said bellows passing through at least a portion of said adapter opening and surrounding a portion of said stem, one end of said bellows being affixed to said adapter around said adapter opening adjacent said adapter outer end with the other end of said bellows being affixed to said valve stem adjacent said valve member thereby closing said adaptor opening and sealingly isolating said stem and whereby fluid passing through said valve from said inlet to said outlet exerts an external compressive force against said bellows;

first means for at least selectively urging said stem axially outward of said adapter so that said valve member is urged axially outward from said valve chamber away from said valve seat; and,

second means for at least selectively urging said stem axially inward of said adapter into said valve chamber for moving said valve member into engagement with said valve seat thereby closing said valve and preventing fluid flow therethrough.

4,201,367

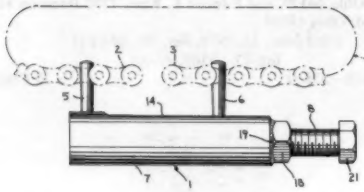
CHAIN STRETCHER APPARATUS

Jerome P. Konen, Sr., 3037 E. Somers Ave., Cudahy, Wis. 53110

Filed Dec. 11, 1978, Ser. No. 968,117

Int. Cl.[2] B66F *3/10*

U.S. Cl. 254—67 **7 Claims**



1. A chain stretcher apparatus for positioning the opposed ends of a roller-type link chain and the like in a machine, comprising an outer housing having an inner guide bore and longitudinal opening, a piston member slidably journaled within said bore for smooth guided sliding movement therein, resilient means urging the piston to one end of the bore of the housing, a first pin-like jaw secured to the piston member and projecting therefrom through said longitudinal opening, a second pin-like jaw interconnected to the housing adjacent said one end of the bore and in spaced relation to said first jaw, a power positioning means secured to the housing and including a jaw positioning member extending into the housing through the second end of the bore in abutting relation and releasably coupling with the piston member for positioning thereof within the housing against said resilient means and thereby positioning the first jaw relative to the second jaw for adjustment of the spacing between the jaws and thereby permitting the corresponding spacing of the chain ends.

4,201,368

ARRANGEMENT FOR EMERGENCY OPENING A VEHICLE DOOR

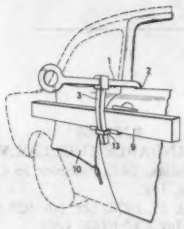
Manfred Vetter, Zülpich-Langendorf, Fed. Rep. of Germany

Filed Nov. 9, 1978, Ser. No. 959,362

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 7735079[U]

Int. Cl.[2] B66F *3/00*

U.S. Cl. 254—131 **17 Claims**



1. An arrangement for emergency opening of a vehicle door, comprising an elongated inner member arranged for abutting against an inner surface of a vehicle door; an elongated transverse member extending transverse to said inner member and arranged to extend through a window opening of the vehicle door, said transverse member being of one piece with and extending substantially normal to said inner member; an elongated outer member extending outside of the vehicle door substantially parallel to said inner member in spaced relationship with the latter and arranged for applying a force to the vehicle door for opening the latter, said transverse member extending through said outer member and the latter being movable lengthwise of said transverse member relative to the inner member so as to vary the distance between said outer and inner members whereby the vehicle door can be forcedly opened, said inner and outer members having inner faces facing toward one another and provided with thorn-like projections which prevent sliding off of the arrangement from the vehicle door, said outer member being arranged so that a beam can be located between said outer member and an outer face of of the vehicle door; and means for supporting the beam and arranged on said outer member.

4,201,369

PULLEY ARRANGEMENT FOR THE LAYING OUT OF ELECTRICAL LEADS IN A BUNDLE FASHION

Walter Betta, Bergamo, Italy, assignor to WABING S.r.L., Bergamo, Italy

Filed Sep. 21, 1978, Ser. No. 944,610

Claims priority, application Italy, Oct. 7, 1977, 4219/77[U]

Int. Cl.[2] B66D *1/36*

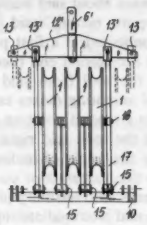
U.S. Cl. 254—193 **3 Claims**

1. A pulley system for the laying out of electrical leads, wherein the number of pulleys assembled is equal to the number of electrical leads to be laid out, and comprising:

at least one pulley subassembly, said subassembly consisting of a pulley having a hub and having a central pin forming an axle, and further consisting of two support arms attached at one end to opposite ends of said central pin so as to extend parallel to the radius of said pulley, each arm having a hole in its free end;

a support beam subassembly, consisting of two parallel beams which are transversely connected, each beam having a plurality of holes for pin connection to the free ends of the support arms of said pulley subassembly, said pin connection holes on the beams being spaced at multiples of the width of said pulley subassembly such that alternate pairs of pulley support arms are connected alternately to one beam and to the other in staggered fashion such that each said pulley is positioned parallel to a single plane and transverse to the plane containing said parallel beams;

an upper cross piece having a swivelling central fixture for



attachment to a lifting line and having holes spaced at multiples of the pulley width, one pair of said holes being spaced for connection with said support arms of a single pulley subassembly;

two side plates having holes at each end for attachment to said support beams and to said upper cross piece respectively; and

pins for connecting said support arms and said side plates, the central pin of each said pulley being connected to the central pin of the adjacent pulley and the central pins of the outermost pulleys being connected to said side plates when more than one pulley is used.

4,201,370

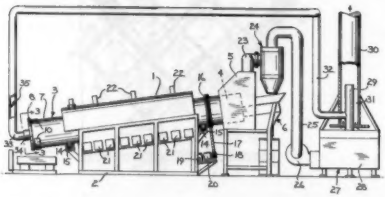
METHOD AND APPARATUS FOR HEAT TREATING MATERIALS TO REMOVE CONTAMINANTS

Marvin Evans, and David H. Miller, both of Milwaukee, Wis., assignors to College Research Corporation, Butler, Wis.

Filed Jul. 10, 1978, Ser. No. 923,019

Int. Cl.[2] F27D *7/00*; F27B *7/34*; F23B *5/04*

U.S. Cl. 266—44 **6 Claims**



1. An apparatus for treating materials to remove combustible substances thereform, comprising a furnace, a rotable inclined retort disposed within the furnace for conveying material to be treated, feeding means for introducing the material into the upper end of the retort, discharge means for removing the treated material from the lower end of the retort, heating means associated with the furnace for heating the retort and the combustible substances therein to produce combustible gases, gas combustion means separate from the retort and having an inlet to receive said combustible gases and having an outlet stack, first conduit means connecting one end of the retort and said inlet for conducting said combustible gases to said combustion means, the combustible portion of said gases being burned in said combustion means, and the combusted gases being discharged through the stack, second conduit means connecting said stack with the other end of said retort for conducting said combusted gases to said retort, closure means for enclosing said other end of the retort and having an opening to receive said second conduit means, and means for mounting the retort for rotation relative to said second conduit means.

6. A method of treating scrap metal to remove contaminants therefrom, comprising the steps of feeding the scrap metal into the upper end of an inclined retort, rotating the retort to convey the scrap metal downwardly through the retort, heating the scrap metal being conveyed in the retort to vaporize the contaminants and generate combustible gases, discharging the treated scrap metal from the lower end of the retort, conducting the combustible gases from the upper end of the retort to a combustion chamber, combusting the combustible gases in said chamber and discharging the gases of combustion through a stack, returning a portion of said gases of combustion from the stack to the lower end of the retort, and passing the gases of combustion through the retort in contact with the scrap metal and in a countercurrent direction with respect to the direction of flow of the scrap metal.

4,201,371

CONTROL UNIT FOR TORCH-CUTTING MACHINES USED IN CONTINUOUS CASTING

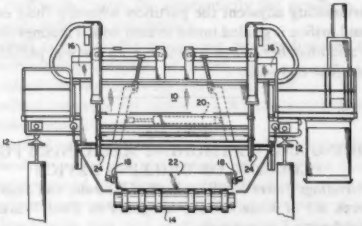
René Pillon, Villeneuve le Roi, France, assignor to Fives-Cail Babcock, Paris, France

Filed Feb. 22, 1979, Ser. No. 14,084

Claims priority, application France, Mar. 10, 1978, 78 06935

Int. Cl.[2] B23K *31/10*

U.S. Cl. 266—50 **5 Claims**

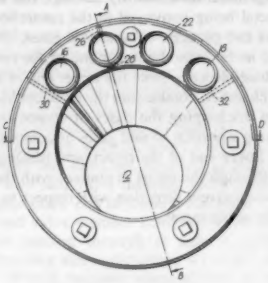


1. Control unit for torch-cutting machine fitted with bars, hinged on the machine frame, which grip the sides of the cast product and ensure that the machine and the cast product move along together, as well as at least one cutting-torch carriage, which is movable in a direction at right angles to that of the machine, this control unit consisting of a first element carried by the cutting-torch carriage and a second element placed on the path followed by the first element during the carriage's travels, the two elements in combination ensuring that the carriage is halted when it reaches a predetermined position, and being characterized by the fact that the second element is kinematically linked to the grip-bar situated on the side of the cast product where the cut will begin, in such a way that the movements of the grip-bar move this second element in a direction parallel to the path of the cutting-torch carriage, at a speed equal to and in the same direction as the component, parallel to the path of the cutting-torch carriage, of the speed of the end of the grip-bar which comes into contact with the cast product.

4,201,372
BLAST FURNACE TUYERE

Colin F. Widmer, Cleveland, England, assignor to James Brown & Sons Limited, Cleveland, England

Filed May 9, 1979, Ser. No. 37,292
Claims priority, application United Kingdom, May 23, 1978, 21693/78
Int. Cl.[2] C21B 7/10
U.S. Cl. 266—270 3 Claims

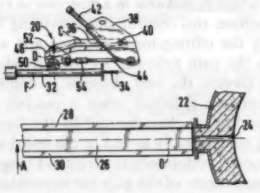


1. A tuyere for a blast furnace having a nose and a rear end, a cooling chamber of annular cross-section with inner and outer walls, a first end wall towards the nose of the tuyere and a second end wall at the rear of the tuyere, inlet and outlet orifices in the second end wall through which cooling fluid may be passed into and out of the said chamber, a partition within the said chamber which runs the axial length of the said chamber and extends between the said inner and outer walls and which is located such that there is one said orifice each side of the said partition, and a guide member on each side of the said partition extending within the chamber from the said second end wall towards but not reaching the first end wall being so located that each orifice is between the said partition and a said guide member, the forward end of each guide member terminating adjacent the partition whereby fluid entering by a said orifice is guided into a stream which reaches that part of the said chamber which is near to both the said partition and the said first end wall.

4,201,373
GUIDING AND POSITIONING MECHANISM FOR A PLUGGING OR DRILLING DEVICE

Léon Ulveling; Pierre Mailliet, both of Howald, and Jean Metz, Pierret, all of Luxembourg, assignors to Paul Wurth-S.A., Luxembourg, Luxembourg

Filed Sep. 18, 1978, Ser. No. 943,228
Claims priority, application Luxembourg, Jun. 1, 1978, 79749
Int. Cl.[2] C21B 7/12
U.S. Cl. 266—271 11 Claims



1. Apparatus for guiding and positioning a tool relative to a taphole of a shaft furnace, the taphole communicating with a pouring channel whereby molten metal may be withdrawn from the furnace, the taphole having an axis which lies in a vertical plane, the tool having a longitudinal axis, said apparatus comprising:

main pivot means, said main pivot means having a longitudinal axis which defines a first angle with respect to the vertical;

support arm means, said support arm means having a longitudinal axis and being mounted on said main pivot means for pivoting about said main pivot means axis;

guide bar means;

means coupling a first end of said guide bar means to said support arm means whereby said guide bar means will move with said support arm means during pivoting of said support arm means about said main pivot means axis;

intermediate support means, said intermediate support means being connected at a first point to said guide bar means adjacent the second end thereof;

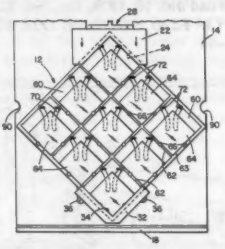
means mounting the tool from said intermediate support means, said tool mounting means establishing a rigid connection between a second point on said intermediate support means and the tool, said rigid connection being adjustable to vary the angle of inclination of the tool axis with respect to the horizontal;

auxiliary pivot means, said auxiliary pivot means connecting a third point on said intermediate support means to a point on said support arm means which is displaced from said main pivot means, said auxiliary pivot means having an axis which is inclined in a first direction with respect to said main pivot means axis whereby said auxiliary pivot means axis defines a second angle with respect to a vertical, said second angle differing from said first angle; and means for causing said support arm means to rotate about said main pivot means axis whereby the tool will be moved between an operative position with its axis generally aligned with the taphole axis and a retracted position.

4,201,374
SUBSTRATE CARRIER

Ranulf W. Gras, Lincoln, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Dec. 21, 1978, Ser. No. 971,651
Int. Cl.[2] B25B 1/20
U.S. Cl. 269—37 16 Claims



1. Apparatus for supporting substrates that carry electrical components, comprising:

a base with a generally flat upper surface for supporting the undersides of said substrates,

a plurality of fence portions protruding from said upper surface for bearing against sides of said substrates,

a plurality of moveable arms for biasing said substrates against said fence portions,

said arms including portions exposed to the underside of said base and adapted for engagement with external actuating means positioned below said base, and

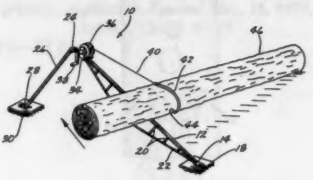
spring means for biasing said arms,

whereby said arms can be retracted by said external means while said upper surface is fully accessible for insertion of said substrates.

4,201,375
FIREWOOD CUTTING AID

Everett T. Pierce, R.F.D., Clare, Iowa 50524

Filed Jan. 2, 1979, Ser. No. 565
Int. Cl.[2] B66C *23/60*
U.S. Cl. 269—46 9 Claims

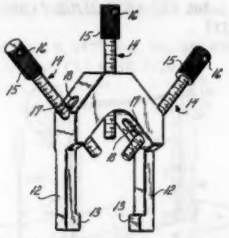


1. A portable log handling device comprising,
an inclined skid member which is cylindrical in shape and provides an arcuate top surface which minimizes contact with logs which are to be lifted and slid up on said skid said skid having forward and rearward ends, the angle of incline being such that logs may be slid upon said skid, such that the weight of said logs tends to hold said skid in position,
bracing mounted on said skid underneath the surface of said skid which engages logs,
a foot support at its forward end, and
support means adjacent its rearward end to hold said skid in an inclined position,
a winching means attached to said skid near its rearward end for engaging logs and winching the same upon said skid to a midway position between the forward and rearward ends of said skid.

4,201,376
ADJUSTABLE CLAMP FOR V-BLOCK

Kochukadamthotil V. Philips, 164-10 84th Ave., Jamaica, N.Y. 11432

Filed Dec. 26, 1978, Ser. No. 973,520
Int. Cl.[2] B25B *1/20*
U.S. Cl. 269—156 2 Claims

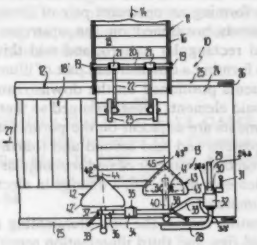


1. An adjustable clamp for a V-block comprising means forming two legs joined together at an acute angle and each having an inwardly directed free end slidably positionable in the V-block, a first threaded hole formed through said means on an axis at least approximately bisecting said acute angle, a first externally threaded elongated member extending through said first hole and having its threads engaged by the threads of the first hole, a respective slot formed in each of the two legs at a location remote from the free end thereof, a respective block slidably received in each of the slots, respective second and third threaded holes formed through said blocks each on an axis at least approximately intersecting the axis of the first hole at points within the acute angle and within an imaginary line extending between the tips of the legs regardless of the positions of the blocks in the slots, and respective second and third externally threaded elongated members extending through said second and third holes and having their threads engaged by the threads of the second and third holes, whereby a workpiece of any cross section can be held rigidly on the V-block by the three elongated members.

4,201,377
CONVEYOR SYSTEM HAVING A LATERAL TAKE-OFF CONVEYOR FOR FLAT PRODUCTS, ESPECIALLY PAPER PRODUCTS

Werner Honegger, Tann-Ruti, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed May 22, 1978, Ser. No. 908,013
Claims priority, application Switzerland, May 27, 1977, 6530/77
Int. Cl.[2] B65H *5/00*
U.S. Cl. 271—225 8 Claims

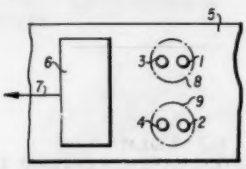


1. A conveyor system for substantially flat products, especially paper products, comprising:
an infeed conveyor for conveying the products in a first predetermined direction of travel;
said infeed conveyor having a discharge end;
an outfeed conveyor for conveying the products in a second predetermined direction of travel;
said outfeed conveyor traveling past the discharge end of the infeed conveyor and at an angle with regard to said first predetermined direction of conveying of the products;
a number of essentially conical clamping bodies each having a lengthwise axis and operatively associated with said outfeed conveyor;
means for mounting said essentially conical clamping bodies to be rotatable about their related lengthwise axis;
said mounting means arranging said essentially conical clamping bodies in succession in the second direction of conveying of the outfeed conveyor and in spaced relationship from the discharge end of the infeed conveyor;
each of said clamping bodies having a tip directed towards the direction of conveying of the infeed conveyor;
each of said clamping bodies having an outer surface;
said outer surfaces of said clamping bodies together with the outfeed conveyor forming a respective product conveying gap which is effective in the second direction of conveying of the outfeed conveyor; and
the spacing of the successive clamping bodies increasing from the discharge end of the infeed conveyor in the conveying direction of the outfeed conveyor, said spacing being measured in a plane parallel to the conveying direction of and perpendicular to the plane of the outfeed conveyor.

4,201,378
SKEW DETECTOR

Kenneth A. Hams, Nazareth, Pa., assignor to Bell & Howell Company, Phillipsburg, N.J.

Filed May 16, 1978, Ser. No. 906,379
Int. Cl.[2] B65H 7/08
U.S. Cl. 271—261 7 Claims



1. A photoelectric skew detection system for monitoring the misalignment of rectangular articles travelling on a track and the condition of illumination elements in said system, said system comprising:

four illumination sensitive elements arranged on one side of said track in an elongated rectangular pattern, said pattern having an axis of elongation substantially normal to the direction of article travel, said first and second of said elements forming an upstream pair of illumination sensitive elements positioned on the upstream side of said elongated rectangular pattern, and said third and fourth elements forming a downstream pair of illumination sensitive elements positioned on the downstream side of said pattern, said elements being arranged so that said first and third elements are adjacent on the perimeter of said rectangular pattern and said second and fourth elements are adjacent on the perimeter of said rectangular pattern, each of said elements producing a change in electrical activity when illuminated;

two illumination means, the first illuminating means illuminating said first and third illumination sensitive elements, and the second illumination means illuminating said second and fourth illumination sensitive elements, said illumination means being positioned on th other side of said track from said illumination sensitive elements so that articles traveling on said track can block illumination from said illumination means; and,

an electrical circuit means connected to said illumination sensitive elements for generating an error signal in response to changes in the electrical activity of said illumination sensitive elements when a trailing edge of a rectangular article traveling on said track unblocks at least one of said downstream pair of elements while one of said upstream illumination sensitive elements is still blocked.

4,201,379
MARTIAL ARTS PRACTICE BAG

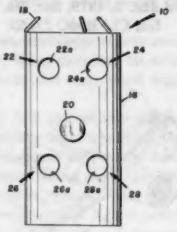
Clarence Williams, 2501 W. Lombard St., Baltimore, Md. 21223

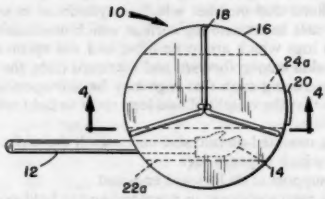
Filed May 9, 1978, Ser. No. 904,217
Int. Cl.[2] A63B 69/00
U.S. Cl. 272—76 6 Claims

1. A martial arts practice system comprising:

a body means having a plurality of apertures therein, said body means being a cylindrically shaped bag-like structure having an exterior covering and additionally a top and bottom to enclose said cylindrically shaped bag-like structure, said structure being stuffed with a stuffing material, said plurality of apertures each being cylindrical and lined and passing through said body means, the exterior covering of said cylindrically shaped bag-like structure, the top, and the bottom of said cylindrically shaped bag-like structure, and the internal lining of said plurality of apertures through said body means are each attached together and attached to each other by a cementing material; and

a plurality of operable extensions of rod-like structure, each removably inserted within one of said plurality of aper-



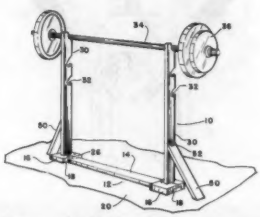


tures, each said operable extension having a padding means affixed to one end thereof.

4,201,380
PORTABLE DISASSEMBLABLE STAND FOR WEIGHT LIFTING EQUIPMENT

Arthur D. Birch, 45 Hillcrest Rd., Warren, N.J. 07060

Filed Mar. 16, 1978, Ser. No. 887,017
Int. Cl.[2] A63B 21/06, 13/00
U.S. Cl. 272—117 4 Claims



1. A barbell stand comprising a base formed of a cross piece adapted to rest flat on a surface, said piece having notches near the ends thereof; a pair of blocks on each side of said cross piece; one block of each pair having a notch adapted to register with the underlying notch of said piece; each block having a portion fitting over said piece with the ends of said portions abutting; uprights fitting in said notches, securing means fixed to one of said blocks and passing through an opening in one of said uprights and received in the other and opposite block of the same pair; vertical removable securing means fitting in registering openings in said blocks and said cross piece, said uprights having alinged notches for holding a bar of a barbell.

4,201,381
RACQUET FRAMES

Roger G. Gerbet, Etampes; Jean-Claude Leroux, Saclas; Daniel L. Morin, Evry, and Marius F. Leclercq, Lagny, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

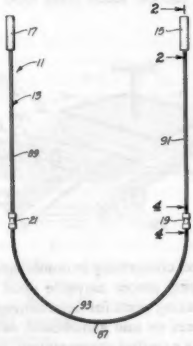
Filed Mar. 13, 1978, Ser. No. 885,623
Claims priority, application France, Mar. 18, 1977, 77 08234
Int. Cl.[2] A63B 49/10
U.S. Cl. 273—73 F 7 Claims

1. Racquet frame consisting of four generally similar laminar strips, the transverse cross-section of each of said strips being bounded by a rectangle, said strips being bonded to one another, the length of each strip corresponding to a complete loop of the frame, the width of the strips corresponding to the thickness of the frame in the direction perpendicular to the plane of the frame, the thickness of each strip corresponding to a fraction of the thickness of the frame in the plane of the frame, each strip having a single longitudinal groove which reduces the thickness of the strip thereat, and which maintains on each face of the strip a surface sufficient to permit a given bonding with the adjoining strip, and which is such that, in each cross-section of the strip, the mass is distributed remotely from the center of gravity, and in each strip there are reinforcing fibres which are impregnated with a thermosetting resin and are oriented longitudinally relative to the strip, further characterized in that the two outer strips of the frame are each positioned that the concavity of the respective longitudinal groove faces outwardly, and that the two inner strips are positioned in such a manner that the transverse cross-section of the frame is symmetrical with respect to a central line perpendicular to the plane of the frame.

4,201,382
SKIP ROPE

Bradford W. Wilson, 1642-A Coriander, Costa Mesa, Calif. 92626

Filed Nov. 9, 1977, Ser. No. 849,874
Int. Cl.[2] A63B 5/20
U.S. Cl. 272—75 2 Claims

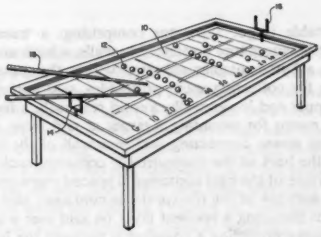


1. A skip rope comprising:
an elongated flexible element having first and second end portions;
first and second handles;
first means for attaching the first handle to the first end portion of the elongated flexible element;
second means for attaching the second handle to the second end portion of the elongated flexible element;
a first knot formed in said elongated flexible element intermediate said first handle and the mid-point of said elongated flexible element;
a second knot formed in said elongated flexible element intermediate said second handle and the mid-point of said elongated flexible element;
first and second enclosures housing said first and second knots, respectively;
each of said enclosures having a peripheral wall with openings at the opposite ends thereof to permit the passage of the elongated flexible element through said enclosure and means cooperating with the associated knot for retaining the enclosure at a predetermined location along the elongated flexible element;
said retaining means for said enclosures including an end wall removably attached to said peripheral wall whereby upon removal of said end wall, the enclosure can be moved along the elongated flexible element independently of said knot to permit the knot to be untied and retied at a new location with the enclosure being movable along the elongated flexible element to house the retied knot; and
said enclosures including an additional end wall attached to said peripheral wall of the enclosures, each of said end walls having an opening through which the elongated flexible element extends.

4,201,383
SIMULATED FOOTBALL GAME

Joseph P. Schaller, 1884 Bairsford Dr., Columbus, Ohio 43227

Filed Mar. 23, 1978, Ser. No. 889,389
Int. Cl.[2] A63F 7/06
U.S. Cl. 273—94 4 Claims



1. A game for playing simulated football games, said game comprising:
(a) a high friction playing field mat having football playing field indicia thereon;
(b) a plurality of balls on said mat for simulating players, said balls having a weight sufficient to substantially compress said mat for efficiently dissipating their kinetic energy;
(c) a plurality of sticks for manually striking and propelling said balls; and
(d) a synthetic resin foam, oblate spheroid for being propelled over said mat simulating a football.

4,201,384
SET OF GOLF BALLS

Jerry Barber, P.O. Box 550, La Canada, Calif. 91011

Filed May 25, 1977, Ser. No. 800,564
Int. Cl.[2] A63B 69/36
U.S. Cl. 273—199 R 6 Claims

1. Apparatus for use in the teaching of the game of golf comprising
a set of golf balls of predetermined size and weight, said set

comprising at least three golf balls, said first ball having a diameter of 1.80 inches, said second ball having a diameter

of 1.74 inches, and said third ball having a diameter of 1.68 inches.

4,201,385

SOUND INSULATED TARGET APPARATUS WITH PROJECTILE BUTT CONTAINER

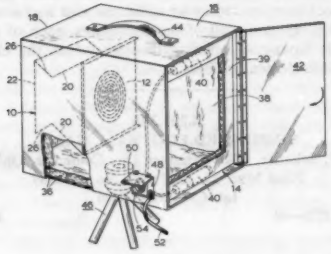
Andreas Szabados, Otto-Heilmann-Strasse 2, 8022 Grunwald b. Munich, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 845,380

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1976, 7633380[U]

Int. Cl.[2] F41J *1/14*

U.S. Cl. 273—102.4 **1 Claim**



1. Portable target apparatus comprising: a transportable container having a top, bottom, side walls, a back and a front aperture; a butt container mounted within the transportable container for collecting spent projectiles, said butt container having upper and lower walls, a solid rear wall, a front aperture and means for mounting a target at said front aperture; connection means connecting said rear wall of the butt container to the back of the transportable container such that the front aperture of the butt container is spaced rearwardly from the front aperture of the transportable container, said connection means including a resilient layer on said rear wall of the butt container providing a connection between the inner butt container and the outer transportable container, said resilient layer also constituting an impact absorbing means and a sound deadening means for projectiles striking the rear wall of the butt container, said upper and lower walls of the butt container being V-shaped and having apices facing inwardly toward one another; sound insulation covering in entirety the outside of said walls of the butt container; and sound insulation covering in entirety the inside of the transportable container.

4,201,386

GENEALOGY APPARATUS

Glenn C. Seale, and George L. Frame, both of Albany, N.Y., assignors to Triad Associates, Albany, N.Y.

Filed Feb. 13, 1978, Ser. No. 877,519

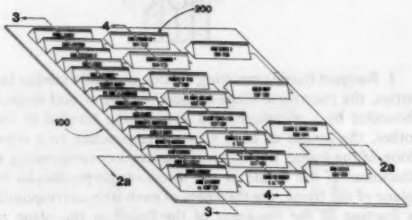
Int. Cl.[2] A63F *3/00*

U.S. Cl. 273—236 **10 Claims**

1. A genealogy apparatus comprising:

a single panel, said panel including a substantially flat playing board with a unitary playing surface the playing surface consisting of a plurality of stations defined by rectangular recesses in the playing board wherein each rectangular recess has an area sufficiently large to accomodate word indicia; wherein some said stations have word indicia thereon, and wherein each station represents an individual, said stations being arranged in a plurality of columns wherein each column represents a generation and wherein each successive column has half the number of stations of the preceding column, the individual stations of each column being juxtaposed with a pair of stations in the preceding column so that the pairs of stations represent parents and the individual stations represent children and so that the stations converge in paternal and maternal stepped arrays to a principal station;

color coding associated with the stations wherein paternal stations have a different color from maternal stations and



wherein one station of each pair is coded with one shade of the color to represent a male and the other station of each pair is coded with another shade of the color to represent a female; and

three dimensional playing pieces which are triangular in cross-section and have three rectangular sides, wherein each of the sides has word indicia thereupon identifying the piece as representing an individual, the word indicia on some of the pieces corresponding to the word indicia on some of said stations; and one of the sides forms a bottom side corresponding in geometry and area to the geometry and area of the recesses, whereby the playing pieces are mounted on the surface and within the recesses and do not readily slide relative thereto.

4,201,387

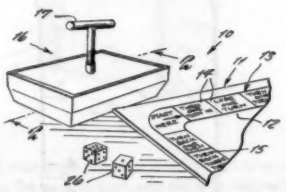
BALLOON BUSTER GAME

Mike Revermann, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of, New York, N.Y. 10007

Filed Aug. 18, 1978, Ser. No. 934,838

Int. Cl.[2] A63F *3/00, 9/00*

U.S. Cl. 273—243 **4 Claims**



1. A game device, comprising in combination, a gameboard, a plurality of playing pieces movable upon said gameboard, and a balloon squeezing press for determining a travel distance of said playing pieces on said gameboard, said press including an enclosure having a central compartment, an inflated balloon inside said compartment, an opening in a side of said enclosure, a button placed in said opening, a sidewardly chute on an outer side of said enclosure for said button to slide thereupon and said chute being numerically calibrated.

4,201,388

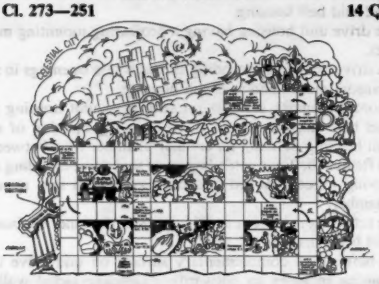
GAME APPARATUS

Ruth F. Cantelon, 2804 Vallette St., Bellingham, Wash. 98225

Filed Sep. 12, 1977, Ser. No. 832,116

Int. Cl.[2] A63F *3/00*

U.S. Cl. 273—251 **14 Claims**



10. A game apparatus comprising:

a. a game board displaying a path separated into increments of travel along said path,

b. chance means presenting randomly determined numerical values determining a player's progress along the path,

c. a plurality of question cards containing quotations, with key words deleted therefrom, and a larger number of possible correct answer words associated therewith, with said answer words having identifying designations,

d. a plurality of answer cards identified to correspond to related question cards and having numerically identified answers thereon corresponding to at least one of said answer words to indicate the correct words to be inserted in said quotations,

e. means to indicate when game participants are to select a question card, and

f. display means having designations in the form of numerical designations of different value corresponding to numerical designations of each of the possible answer words, whereby game participants are able to display selections of answer words prior to determining the correct answers from the answer cards.

4,201,389

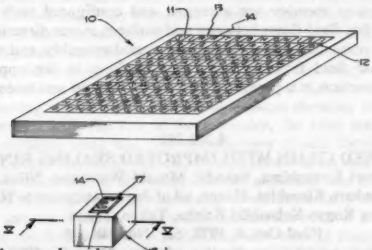
WORD GAME

David H. Vowell, 11427 Sunshine Ter., Studio City, Calif. 91604

Filed May 24, 1979, Ser. No. 42,023

Int. Cl.[2] A63F *3/00*

U.S. Cl. 273—272 **8 Claims**



1. A game board comprising:

a plurality of sections;

letter means associated with each of said sections containing thereon a plurality of individual letters, said letter means being adapted to present only a single pre-selected letter viewable to a player, said letter means including a plurality of rotatable elements, each of said elements having a plurality of faces thereon, each of said faces having only a single letter displayed thereon, said letter means also including a block in each of said sections;

letter changing means on said game board for varying said letter means for changing the letter viewable to a player to another differing letter on said letter means viewable to said player, said letter changing means including said elements being rotatably mounted in said blocks to thereby present differing faces thereof viewable to a player; and

letter locking means on said game board for locking in a pre-selected letter viewable to said player thereby permitting a plurality of aligned juxtaposed letters to be locked into fixed position while the remaining letters are varied.

4,201,390

SEMI-AUTOMATIC RECORD PLAYER

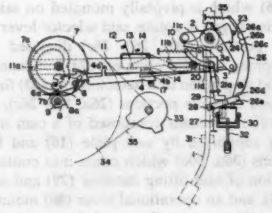
Hirosi Koyahata, Yokohama, and Shunkichi Hioki, Tokyo, both of Japan, assignors to Kato Electric and Machinery Co. Ltd., Kanagawa, Japan

Filed May 24, 1978, Ser. No. 909,010

Claims priority, application Japan, Jun. 10, 1977, 52/76286[U]

Int. Cl.[2] G11B *17/06*

U.S. Cl. 274—15 R **1 Claim**



1. In a semiautomatic record player having a turn-table (34) driven by a motor (33) wherein a record on said turn-table (34) is engaged by the outer end of an elongated tone-arm (1), the inner end of said tone arm (1) being fixed on a tone-arm shaft (2) pivotally mounted on a plate (16) so that said tone-arm (1) outer end can swing horizontally to and away from engagement with a record on said turn-table (34), said record player also having an arm rest where said tone arm outer end normally rests when not playing a record, in combination:

(a) a tone-arm returning apparatus including an actuating member (3) attached to said tone-arm shaft (2), an extended sliding lever (4), one end of which is pivotally mounted on said actuating member (3), said sliding lever (4) moving reciprocally in relation to the horizontal swing motion of said tone-arm (1), a turn-table spindle (9) coupled to said turn-table (34), a main driving gear (8) fixed to said turn-table spindle (9), a second driving gear (7), adjacent said main driving gear (8), said second driving gear (7) having lever means (5,6) pivotally mounted thereon, said lever means being adjacent said sliding lever's other end, said second driving gear (7) and said lever means (5,6) being so disposed that said second driving gear (7) will engage said main driving gear (8) when said lever means (5,6) are engaged by said sliding lever's other end when said sliding lever (4) is moved in one direction, a cam track (7*a*) on said second driving gear (7), and a return lever (11) one end of which is engaged with said cam track (7*a*) and the other end of which has a bent portion (11*d*);

(b) a tone-arm elevating means coupled to said tone-arm (1) located towards said tone-arm inner end and disposed for lifting said tone-arm, including an elevating arm (19) disposed for raising said tone-arm and lowering said tone-

arm with respect to said turn-table, and a lifting member (29) having one end which abuts against said elevating arm (19), said lifting member (29) being disposed for moving said elevating arm (19) in the direction to raise and lower said-tone arm with respect to said turn-table, said returning lever (11) being so adapted and designed as to be reciprocally moved by the turn of said second driving gear (7) and to lift said tone-arm (1) by means of said elevating arm (19) which comes into contact with said bent portion (11*d*), and to push said actuating member (3) such that said tone-arm (1) is lowered with respect to said turn-table and returned to its normal position on the arm rest (31);

(c) switch operating means comprising an actuating pin (11*b*) disposed on the returning lever (11), an actuating portion (4*b*) which protrudes on an intermediate portion of the sliding lever (4), a starting switch (14) which is pivotally mounted so as to be swingable between said actuating pin (11*b*) and said actuating portion (4*b*), and a stopping member (17) which is located at one side of said actuating portion (4*b*), so that said starting switch (14) can be turned to the OFF position only when said actuating portion (4*b*), said actuating pin (11) and said stopping member (17) occupy predetermined positions;

(d) a tone-arm detecting means for click-stopping said tone-arm (1) on a leading track of a record of any size, said tone-arm detecting means including a detecting pin (23) which turns together with said tone-arm (1), and a selector lever (26) which is pivotally mounted on said plate (16) while being urged to rotate, said selector lever (26) having concave portions (26*a*, 26*b*, 26*c*) disposed for slightly click-stopping said detecting pin (23) but capable of over-riding said stop when said detecting pin (23) firmly presses against said concave portions (26*a*, 26*b*, 26*c*); and,

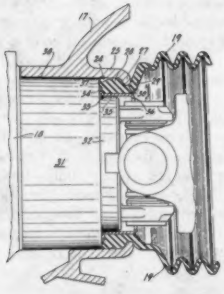
(e) an operational means composed of a cam member (30) rotatably supported by said plate (16) and having two protrusions (30*a*, 30c) which come into contact with the end portion of said lifting member (29) and said selector lever (26), and an operational lever (36) mounted on said cam (24), said operational means being so constructed that said detecting pin (23) and said selector lever (26) come into contact with each other only when said operational lever (36) raises said tone-arm (1) through said lifting member.

4,201,391

FLEXIBLE BELLOWS END CONNECTION IN A MARINE STERN DRIVE

Herbert A. Bankstahl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Feb. 6, 1978, Ser. No. 875,446
Int. Cl.[2] F16J *3/04*
U.S. Cl. 277—30 **3 Claims**



1. A marine stern drive comprising

(a) a transom mount having a drive coupling opening therethrough,

(b) a bell housing having a drive couping opening therethrough,

(c) pivotal attachment means between said transom mount and said bell housing,

(d) a drive unit housing having a projecting mounting member,

(e) a drive coupling extending through said openings in said transom mount and said bell housing,

(f) complementary surfaces on said drive unit housing and said bell housing at said drive coupling opening of said bell housing defining an annular chamber therebetween,

(g) a flexible bellows extending over said drive coupling and having a bead shaped end clamped within said annular chamber,

(h) a retaining member engaging at least the inner surface of said bead shaped end, and

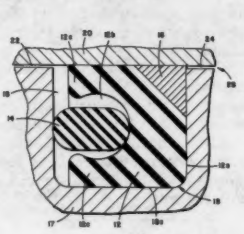
(i) wherein said complementary surface on said drive unit housing includes an outwardly extending radial wall to form a full end wall of said annular recess and said bell housing includes an inwardly extending radial wall to form a partial end wall of said annular recess.

4,201,392

HIGH AND LOW PRESSURE SEAL

James T. Watts, Fullerton, Calif., assignor to Grant Oil Tool Company, Los Angeles, Calif.

Filed Apr. 16, 1979, Ser. No. 30,285
Int. Cl.[2] F16J *15/32*
U.S. Cl. 277—165 **11 Claims**



1. A seal assembly for forming a high and low pressure seal between two surfaces between which pressurized fluid may enter, comprising:

a seal member having a lip member defining a channel;

a back-up member disposed adjacent one side of said seal member; and

a spacer member positioned in said channel in said seal member wherein said seal member, back-up member and spacer member are arranged and configured such that when fluid flows between said surfaces in one direction, it is prevented from flowing across said assembly, and when said fluid flows between said surfaces in the opposite direction, it is permitted to flow across said seal assembly.

4,201,393

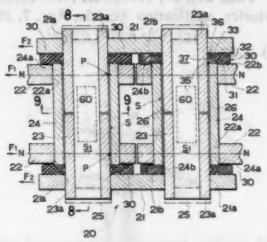
LINKED CHAIN WITH IMPROVED SEALING RINGS

Yoshinori Kawashima, Sakado; Masaki Watanabe, Niiza, and Katsuharu Kinoshita, Hanno, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1978, Ser. No. 948,395
Claims priority, application Japan, Oct. 5, 1977, 52-133953[U]
Int. Cl.[2] F16J *15/34, 15/32*
U.S. Cl. 277—92 **14 Claims**

1. A chain comprising a number of link units each of which includes a pin connecting a pair of outer link plates and a bush connecting a pair of inner link plates, between which a lubri-

cating substance is held and sealed with a sealing ring interposed between the outer link plate and inner link plate, characterized in that said sealing ring is provided with lips at either the inside end or the outside end thereof and with a thick body



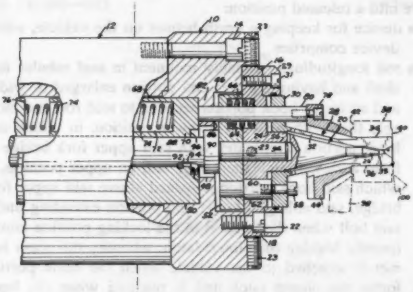
at the other end thereof, and at least one oil reservoir recess is provided on the outer peripheral surface of the pin spaced apart from a load point at which said pin and bush are substantially in contact with each other.

4,201,394

COLLET CHUCK

London T. Morawski, 15850 Common Rd., Roseville, Mich. 48066

Filed Dec. 1, 1978, Ser. No. 965,290
Int. Cl.[2] B23B *31/40*
U.S. Cl. 279—2 R **5 Claims**



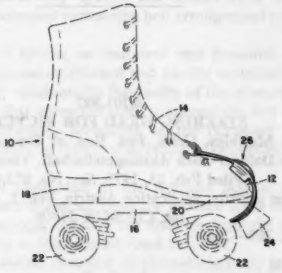
1. A collet chuck having a body at its rear end adapted to be fixedly mounted on the rotary spindle of a machine tool and having a collet expander at its forward end mounted on said body, the front end of said collet expander having a tapered nose formed integrally therewith which is accurately concentric with the central axis of the expander, means for adjusting the expander radially on said body so that the expander is concentric to a high degree of accuracy with the rotary axis of the spindle on which the body is fixedly mounted, said expander having adjacent its rear end a cylindrical shoulder thereon concentric with the axis of the expander, the axial length of said shoulder being less than the diameter of said shoulder, a collet sleeve having its rear end portion mounted on said shoulder for axial sliding movement on the expander, the forward end of said sleeve being resiliently circumferentially expandable and contractable to grip and release the bore of a workpiece, the forward end of said collet sleeve being engageable with said tapered nose to expand when shifted axially in one direction and to contract when shifted axially in the opposite direction, a collet puller plate in said body, a plurality of circumferentially spaced, axially extending and radially rigid pins rigidly connected to one end to the rear end of said collet sleeve and rigidly connected at their opposite ends to said puller plate, means operatively connected with said puller plate for shifting it axially within an oversize bore in said body, said expander having a central pilot bore therein accurately concentric with the central axis of the expander, and a pilot pin having a close sliding fit within said pilot bore, said pilot pin being rigidly mounted on said puller plate and extending axially forwardly thereof, the axial length of the portion of said pilot pin within said pilot bore and the axial length of said pilot bore being substantially greater than the diameter of said pilot pin and bore so that the pilot pin and bore prevent the collet sleeve from becoming cocked on said cylindrical shoulder whereby, in response to axial displacement of the puller plate, said pilot pin constrains movement of the puller plate and collet sleeve axially in a highly accurate path concentric with the axis of said tapered nose.

4,201,395

ROLLER SKATE SHOE TOE GUARD

John K. Matejec, Tulsa; Jerry D. Lowry, Broken Arrow, and Gene R. N. Fulbright, Tulsa, all of Okla., assignors to Vanguard Manufacturing, Inc., Tulsa, Okla.

Filed Oct. 10, 1978, Ser. No. 949,968
Int. Cl.[2] A63C *17/26*
U.S. Cl. 280—11.37 M **8 Claims**



1. A toe guard for use on a roller skate shoe having a lace and an extending toe stop adjacent the shoe toe, the toe guard comprising:

an elongated flexible member having a large diameter opening at one end of a dimension to snugly receive a toe stop of a roller skate shoe, and of length to extend from the toe stop over the shoe toe, and having adjacent the other end opposed small diameter openings for receiving the lace of a roller skate shoe.

4,201,396

ROLLER-SKATE BICYCLE FOR AMUSEMENT, MOVING BY THE SWINGING MOVEMENT OF THE DRIVER

Giovanni Gessi, Via Claudia, 1971, Savignano S. Panaro, Modena, Italy

Filed Jan. 18, 1978, Ser. No. 870,510
Claims priority, application Italy, Jan. 21, 1977, 3319 A/77
Int. Cl.[2] B62M *1/10*
U.S. Cl. 280—229 **10 Claims**

1. A rider powered vehicle, such as a roller-skate type bicycle for amusement and exercise, comprising:

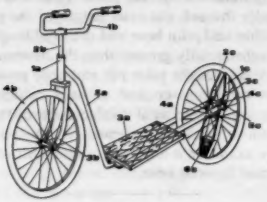
a frame;

a footboard mounted to said frame for oscillatory movement with respect to said frame, the rider normally standing on said footboard during operation of the vehicle;

a driven wheel having an off-center axle, said wheel being eccentrically rotatable about said axle;

a rigid linkage rotatably mounting said wheel to said frame and in operative engagement with said footboard to convert oscillatory movement of said footboard into rotary movement of said driven wheel, said oscillatory movement having upper and lower critical points at which

oscillatory movement transmitted to the off-center axle is free of non-radial components and is passed through by inertial forces generated in the system;



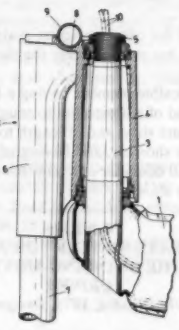
means mounted on said driven wheel and operable for generating counterweight forces therein opposite to said axle whereby to generate inertial forces to facilitate operation of the vehicle.

4,201,397

STEERING HEAD FOR BICYCLES

Jan H. Matthias, Gries, Fed. Rep. of Germany, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Feb. 13, 1978, Ser. No. 873,907
Claims priority, application Austria, Feb. 1, 1977, 598/77
Int. Cl.[2] B62K *21/06*
U.S. Cl. 280—280 **1 Claim**



1. A steering head for a bicycle comprising a main frame member having a forward end and extending downwardly and rearwardly from the forward end, and a front wheel fork having a fork head, which comprises

(a) a tubular mounting shaft open at both ends and having a lower end secured to the forward end of the main frame member,

(1) the mounting shaft projecting upwardly from the forward end of the main frame member and defining a passageway for cables, and

(2) the main frame member being hollow and the passageway being in communication with the interior of the hollow main frame member, and

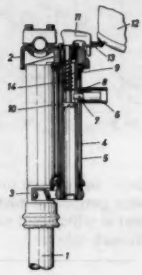
(b) a bearing sleeve rigid with the fork head and rotatably mounted on the mounting shaft.

4,201,398

DEVICE FOR KEEPING A CRASH HELMET ON A TWO-WHEELED MOTORCYCLE

Karl Meier, Lassnitzhöhe, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Jul. 27, 1978, Ser. No. 928,611
Claims priority, application Austria, Apr. 7, 1978, 2452/78
Int. Cl.[2] E05B *69/00*
U.S. Cl. 280—289 L **2 Claims**



1. In a two-wheeled vehicle comprising a tubular steering head, a tubular fork shaft rotatably mounted in said tubular steering head and having a shell aperture, two fork blades, upper and lower fork bridges firmly connecting said fork blades to said fork shaft, and a steering lock having a bolt and operable to move said bolt into said tubular fork shaft through said shell aperture to a locking position, and out of said aperture into a released position:

a device for keeping a crash helmet on the vehicle, which device comprises

a rod longitudinally slidably mounted in said tubular fork shaft and having a lower end portion enlarged in width, and an upper hook portion secured to said rod and movable therewith between a lower position, in which said hook portion cooperates with said upper fork bridge to form a closed latch therewith, and an upper position, in which said hook portion is spaced above said upper fork bridge, said enlarged lower end portion extending under said bolt when the latter is in the locking position consequently locking the closed latch, whereby the crash helmet is attached to the vehicle when the hook portion forms the closed latch and is released when the hook portion is in the upper position.

4,201,399

TOWING APPARATUS

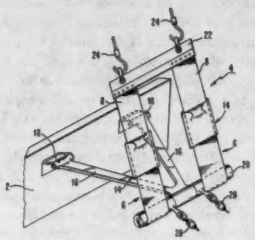
Harold F. Carr, Jr., Hixson, Tenn., and David F. Humphries, Rossville, Ga., assignors to Ernest Holmes Division Dover Corporation, Chattanooga, Tenn.

Filed Jun. 2, 1978, Ser. No. 911,887
Int. Cl.[2] B60P *3/06*
U.S. Cl. 280—402 **4 Claims**

1. A cushioning pad adapted for attachment to a sling belt of a towing sling and for positioning between the belt and the bumper of a towed vehicle comprising:

(A) an elongated sleeve for slidable attachment to the sling belt and held thereto by being deformed by engagement with the towed vehicle to grippingly engage the belt; and

(B) a projection attached to the sleeve along a portion of the width of the sleeve as a bumper retainer means for pre-



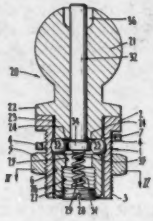
venting the bumper of the towed vehicle from passing over the sleeve upon a forward lurch of the vehicle.

4,201,400

TOWING DEVICE

Thomas C. Hoogenbosch, Boronia, Australia, assignor to J. & A. Atlas Nominees Pty. Ltd, Victoria, Australia

Filed Jul. 14, 1978, Ser. No. 924,700
Int. Cl.[2] B60D *1/06*
U.S. Cl. 280—511 **6 Claims**



1. A towing device removably securable to a vehicular drawbar comprising:

a sleeve adapted for mounting in a hole in the drawbar, said sleeve having an annular groove on the inner surface thereof;

a tow ball element having a tow ball, a shank receivable in said sleeve, and a flange abuttable with the end of said sleeve when said shank is received in said sleeve for locating said shank with respect to said sleeve, said shank having opposed transverse bores aligned with the annular groove of said sleeve when said shank is located in said sleeve, said element having a central longitudinal bore;

a ball located in each of said transverse bores;

an actuator located in said longitudinal bore and movable therealong, said actuator having an enlarged portion for inserting said balls in said annular groove when said actuator is positioned in a preselected position; and

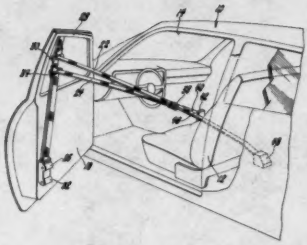
bias means secured in the portion of said longitudinal bore received in said sleeve and having means engaging said actuator for biasing said actuator into said preselected position, said longitudinal bore being formed to provide stop means coacting with said enlarged portion of said actuator for retaining said actuator in said preselected position when biased by said bias means.

4,201,401

PASSIVE LAP AND SHOULDER BELT SYSTEM

Gerald E. Bryan, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1979, Ser. No. 23,687
Int. Cl.[2] B60R *21/10*
U.S. Cl. 280—803 **4 Claims**



4. In combination with a vehicle body having an occupant compartment in which an occupant seat is accessible through a door opening selectively opened and closed by a movable door, a passive occupant restraining belt arrangement comprising:

a restraint belt having an outboard end mounted on the vehicle door and an inboard end fixedly mounted on the vehicle body substantially forwardly of the inboard occupant hip so that when the door is opened the belt is positioned substantially forwardly of the occupant by the swing geometry of the door to facilitate occupant ingress and egress;

a control belt connected to the restraint belt at a point thereon which is spaced from the inboard fixed end by a distance generally equal to the distance from the inboard occupant hip to the inboard fixed belt end;

and retractor means mounted on the vehicle body generally adjacent the inboard hip of the occupant, said inboard retractor means having means associated therewith to retract the control belt when the door is closed to draw the restraint belt rearwardly to substantially adjacent the occupant inboard hip and thereby dispose the restraint belt in a restraint position closely adjacent the occupant.

4,201,402

COMBINATION CHECKWRITING AND BOOKKEEPING ASSEMBLY AND METHOD OF USING SAME

Paul D. Aziz, West Hartford, and Robert W. Hincks, Farmington, both of Conn., assignors to Data Management, Incorporated, Farmington, Conn.

Continuation-in-part of Ser. No. 869,572, Jan. 16, 1978, abandoned. This application Nov. 7, 1978, Ser. No. 957,050
Int. Cl.[2] B41L *1/20, 1/36*
U.S. Cl. 282—9 A **18 Claims**

1. In a bookkeeping and check writing system, the combination comprising:

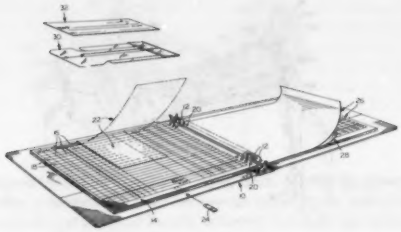
a. a disbursement sheet having length and width dimensions, the width dimension being divided into a multiplicity of columns and the length dimension providing a mulitplicity of lines, two columns being dimensioned cooperatively with commercial checks to record the name of the payee and the numerical amount entered on the checks; and

b. a transfer sheet of lesser width than said disbursement sheet and overlying said two columns of said disbursement sheet; and

c. means releasably securing said transfer sheet in said overlying position; and

d. a shield member having a check positioning portion disposed to one side of said transfer sheet and a shield portion extending therefrom above said disbursement sheet, said shield portion being of a length at least substantially equal

to the portion of a check containing blanks for completion and having an elongated aperture therein extending transversely of said transfer sheet and across said two columns of said disbursement sheet, said positioning portion having an alignment indicium thereon aligned with said aperture, said shield member being adapted to position a check on said transfer sheet with its payee and numerical disbursement portions aligned with said indicium and thereby said two columns of said disbursement sheet on one of the lines thereof, said shield member being movable vertically from line to line thereof, whereby when a check is placed thereon and written only the payee and numerical amount disbursed are entered on one line of said disbursement sheet.

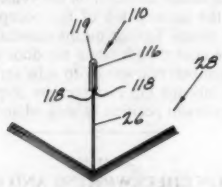


4,201,403

INDEX TAB DEVICE AND INDEX TAB THEREFOR

James F. Turner, 27639 Forestbrook Dr., Farmington Hills, Mich. 48018

Filed Oct. 31, 1977, Ser. No. 846,724
Int. Cl.[2] G09F *3/10*
U.S. Cl. 283—21 **10 Claims**



1. An index tab device for storing and dispensing at least one index tab comprising:

a thin planar tab forming body having a first planar surface coated portion with a pressure sensitive adhesive on no more than one-half of said first surface thereby leaving a remainder of said first surface uncoated such that when said first planar surface is mounted contiguous to a backer sheet only said coated portion adheres to said backer sheet while said uncoated portion allows unrestrained removal of said tab from said backer sheet without affecting the adhesive property of said coated portion by grasping said tab by said uncoated surface area;

an opposite planar surface suitable for printing conspicuous indexing information, whereby when said tab is removed from said backer sheet and applied along the edge of a multiple-part indexable item in a manner such that said no more than one half of said first surface coated with pressure sensitive adhesive is applied directly to a part of said multiple-part indexable item, said uncoated remainder of said first surface protruding from said multiple-part indexable item beyond the edge thereof, thereby exposing said opposite planar surface and appropriate indexing information printed thereon despite said multiple-part indexable item being closed or complied so as to conceal said no more than one-half of said first planar surface, thereby facilitating location of a part of said multiple-part indexable item according to correlation between said indexing information and the part attached thereto; and

a flexible index tab backer sheet having at least one surface with a low adhesive affinity to said pressure sensitive adhesive and having said first planar surface of said at least one index tab applied thereto for dispensing said at least one tab wherein said at least one index tab is disposed on said at least one surface of said backer sheet having said low adhesive affinity with said no more than one-half of said first planar surface of each of said at least one tab forming body in contact with said one surface of said backer sheet having said low adhesive affinity, thus, maintaining said at least one index tab in position on said backer sheet while allowing any of said at least one index tab to be selectively and easily detached from said backer sheet without affecting the adhesive property of said at least one index tab.

4,201,404

PRESSURE-SENSITIVE MARKING MATERIALS

Jack W. Charbonneau, Somerset Township, St. Croix County, Wis.; Richard S. Law, Newport, Minn.; Willis J. Ludwig, Hudson, Wis., and Wayne O. Otteson, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 17, 1978, Ser. No. 907,718
Int. Cl.[2] B41M *5/22*; B01J *13/02*; C09D *11/12*
U.S. Cl. 282—27.5 **12 Claims**

1. Substantially dry microcapsules comprising an organic liquid dye precursor fill enclosed by a strong impermeable shell of melamine-urea-formaldehyde condensation polymer which is substantially free of wetting agents, wherein said condensation polymer is the reaction product of a mixture comprising about 50% by weight formaldehyde, 42 to 50% by weight urea, and 2 to 8% by weight melamine, and wherein said capsules comprise a theoretical liquid fill content of between 50 and 60% by weight based on the total weight of shell and liquid fill.

4,201,405

PERPETUAL OR LONG LIFE CALENDAR

Katherine Rannenberg, Cedaridge Rd., Canton, Conn. 06022

Filed Apr. 18, 1978, Ser. No. 897,398
Int. Cl.[2] G09D *3/00*; B42D *5/04*
U.S. Cl. 283—4 **4 Claims**

1. A calendar having two separate but adjacent stacks of pages, a structural member upon which each stack is bound, the pages of each stack bound together at the top of and to said structural member with a binding so that any page of either stack may be exposed independently of the other stack, and may be rotated 360 degrees about its binding to expose either side of the page independently of the other stack, the axis of rotation of the pages of each stack around its binding being

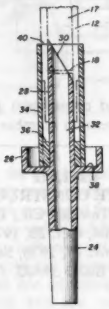
concentric, the pages of one stack each containing the indicia corresponding to the names of one of the months, January, February, March, April, May, June, July, August, September, October, November, December, the pages of the other stack each containing one of the various month calendar combinations of the numerical days of the month arranged by days of the week.

4,201,406

SPIKE CONNECTOR FOR SOLUTION BAG

T. Michael Dennehey, Arlington Heights, and Ludwig Wolf, Jr., Crystal Lake, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 13, 1978, Ser. No. 960,157
Int. Cl.[2] A61M 5/00; F16L 47/00
U.S. Cl. 285—3 **5 Claims**



1. A touch-contamination protected spike connector for coupling a plastic fluid conduit to a port extending from a medical solution container, the port having a transverse diaphragm adapted for breakage by the spike to provide communication from the plastic fluid conduit to the medical solution container, the improvement comprising:

a rigid spike defining a longitudinal bore and having an angled tip;

a flange extending radially outwardly from said rigid spike;

a tube surrounding a major portion of said spike and extending in a generally parallel direction to said spike with the internal wall of said tube being spaced from the external wall of said spike;

a spacer immovably interposed between the spike and the tube, said spacer being formed of resilient material and being connected to said flange and filling a portion of the volume between said spike and said tube;

said angled tip having a distal end which extends a greater distance than said tube in the longitudinal direction.

4,201,407

TUBULAR ASSEMBLY

Robert J. Paterick, Concord, Tenn., assignor to Maremont Corporation, Chicago, Ill.

Filed Oct. 23, 1978, Ser. No. 953,954
Int. Cl.[2] F16L 37/00
U.S. Cl. 285—304 **6 Claims**

1. A tubular assembly comprising:

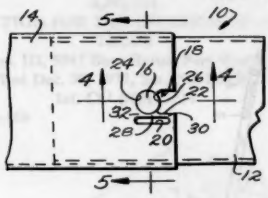
first and second thin wall tubular members having end portions disposed in telescopic relation with respect to one another,

said first tubular member having a pin extending generally radially from the telescopic end portion thereof,

said second tubular member having a slot through its wall extending from the edge of the telescopic end portion thereof axially inwardly into the latter and an opening extending through the wall of said second tubular member in closely spaced relation to said edge in a position generally alongside said slot,

said slot including an outer axially open pin entrance section of a width to receive said pin therethrough, an inner axially inwardly closed pin receiving section receiving said pin therein, and an intermediate locking section of a width smaller than the width of said pin engaged with said pin to retain the same in said inner section,

said second tubular member providing an axially elongated wall portion between said opening and said slot having a



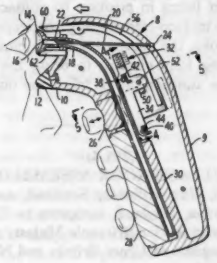
fixed integral outer end spaced axially outwardly of the intermediate locking section of said slot and a fixed integral inner end spaced axially inwardly of the intermediate locking section of said slot for enabling the elongated wall portion between said fixed ends to resiliently deflect laterally when said pin is moved axially inwardly through said slot to thereby permit the locking section of said slot to expand in its width dimension and permit yielding passage of said pin axially thereby into said received relation within the inner section of said slot.

4,201,408

CONTACT LENS INSERTION AND REMOVAL DEVICE

Willard Tressel, 667 Cragmont Ave., Berkeley, Calif. 94708

Filed Feb. 16, 1978, Ser. No. 878,245
Int. Cl.[2] A61F 9/00
U.S. Cl. 294—1 CA **2 Claims**



1. A contact lens insertion and/or removal device comprising in combination:

a. a soft lens cup of a size adapted to receive a contact lens,

b. an opening in the center of said cup, said opening leading to a tube,

c. a rod of an optically clear material within said tube having a first end terminating near said opening and a second end having means for collecting light and directing the light through said rod,

d. means for applying vacuum or pressure through said tube to said cup,

e. a pair of arms adjacent to said lens cup,

f. means for bringing said arms towards each other into contact with said lens cup to distort said cup,

g. a member adapted to partially collapse said tube when in

a first position and adapted to actuate one of said arms when in a second position, and

h. means for bringing said member from said first position to said second position.

4,201,409

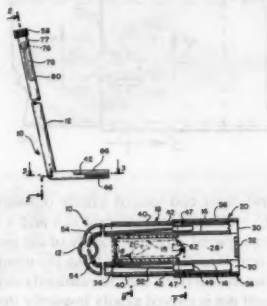
PORTABLE PICK-UP DEVICE

James J. O'Hara, 501 Hemlock La., Lakehurst, N.J. 08733

Filed Sep. 11, 1978, Ser. No. 940,971

Int. Cl.[2] A01K *29/00*

U.S. Cl. 294—1 BA **13 Claims**



1. Apparatus for picking up fecal matter on the ground including in combination a frame with an upper portion that serves as a handle, a container holder at the lower end of the handle, a container, the holder being in position to hold the container with a bottom of the container facing the matter to be picked up, means for loading the matter on the ground into the container, and manually-operated motion transmitting connections on said upper portion and secured at their lower end to means for operating the apparatus, characterized by the means for loading the matter into the container including a second container with a bottom that extends along the ground and an open end facing the first container, said bottom of the second container being in position to contact with the fecal matter when the motion-transmitting connections are operated on a pick-up stroke, the movement of the motion-transmitting connections being long enough to bring the containers into contact with one another and to telescope one container into the other.

4,201,410

RELEASE HOOK ASSEMBLIES

Henry Crawford, East Kilbride, Scotland, and Alexander F. Jessiman, London, England, assignors to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

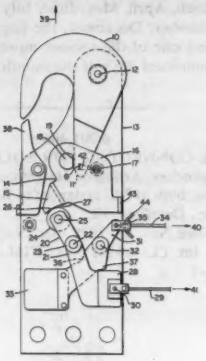
Filed Apr. 7, 1978, Ser. No. 894,296

Claims priority, application United Kingdom, Apr. 6, 1977, 14654/77

Int. Cl.[2] B66C *1/34*

U.S. Cl. 294—83 R **7 Claims**

1. A release hook assembly comprising a frame, a hook mounted on the frame for pivotal movement relative thereto, an escapement member pivotally mounted on the frame so as to be able to retain the hook for closure of the assembly, a release device pivotally mounted on the frame, said release device engaging the escapement member so as to maintain the assembly in the closed position, said escapement member and said release device being so formed and disposed that in operation the escapement member exerts substantially no turning moment on the release device, and a locking member pivotally mounted on the frame so as to engage the release device, whereby displacement of the locking member from engagement with the release device allows subsequent displacement



of the release device and consequent pivotal motion of the hook free from the escapement member.

4,201,411

TAILGATE CONSTRUCTION

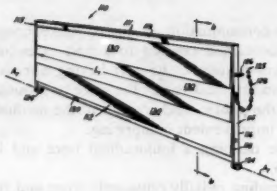
Homer R. Morgan, 2765 Townley Cir., Doraville, Ga. 30340

Division of Ser. No. 843,804, Oct. 20, 1977, Pat. No. 4,136,905.

This application Nov. 17, 1978, Ser. No. 961,696

Int. Cl.[2] B62D *39/00, 35/00*

U.S. Cl. 296—50 **11 Claims**



1. A low drag tailgate construction for attachment in the tailgate opening at the trailing end of an open top cargo compartment of a vehicle in replacement of the conventional tailgate normally associated therewith, said tailgate comprising:

an open frame defining an air opening therethrough having a peripheral configuration corresponding generally to the configuration of the tailgate opening to the open top cargo compartment of the vehicle, said open frame pivotally connected to the trailing end of the vehicle in lieu of the conventional tailgate for selectively extending over the tailgate opening at the trailing end of the open top cargo compartment while permitting air to freely flow from the cargo compartment through the air opening when the vehicle is in forward motion;

a screen member defining a plurality of air passages therethrough mounted on said open frame and extending over said air opening, the size of any individual one of said air passages sufficiently small to retain the cargo in the cargo compartment of the vehicle, yet a major portion of the area of said air opening is defined by said air passages to permit air to freely flow therethrough from the cargo compartment when the vehicle is in forward motion to reduce the air drag associated therewith; and

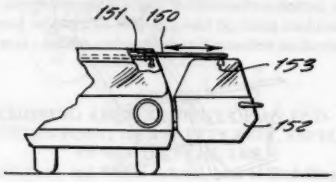
closure means for selectively closing said air passages through said screen member to permit cargo smaller than said air passages such as particulate material to be carried in the cargo compartment, said closure means including a cover plate having a size sufficient to cover all of said air

passages through said screen member and locating means for removably locating said cover plate with respect to said screen member to substantially prevent the passage of air through said screen member.

4,201,412
CAMPING CAR

Smith J. Williams, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Aug. 18, 1978, Ser. No. 935,020
Int. Cl.[2] B60J 7/00
U.S. Cl. 296—163 2 Claims

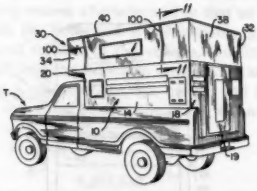


1. In a camping car, the combination of an automobile having front and rear wheels and a body supported thereon sloped upwardly rearward with a pointed forward end, said automobile including windows and windshield each of which are pivotable about a pivot shaft supported on said body including an upwardly slidable roof top door and tailgate, additionally including a mechanism for adjusting the relative centers of gravity of said wheels and the vehicular load supported thereon whereby eccentricity of said centers of gravity may be reduced to minimum, and a rain protection canopy comprising a stiff panel slidably mounted in the vehicle roof adjacent a door of said vehicle, an extension on an underside of said panel being engagable with a door of said automobile, said panel being outwardly slidable over a doorway of said automobile when said door is open, and retractable inside said roof when said door is closed.

4,201,413
LIFT APPARATUS FOR CAMPER TOP

David E. Rowe, 9849 Yarrow Ct., Broomfield, Colo. 80020

Filed Jul. 7, 1978, Ser. No. 922,593
Int. Cl.[2] B60P 3/32
U.S. Cl. 296—165 2 Claims



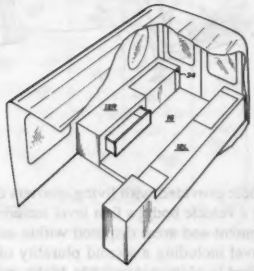
2. In a camper body with an expandable top with a flexible, foldable wall portion extending between a solid wall portion and a roof of the camper body, the improvement comprising:

an elongated stiff and resilient member having an inherent crimp at its midsection for resisting total straightening of the member and adapted to bias the member to bend in the direction of the crimp when compression forces are applied to the opposite ends of said member tending to push said opposite ends together, said member being positioned to extend between said solid wall portion and said roof with said crimped midsection in contact with said flexible wall portion and oriented with the crimp and biased bend directed inwardly toward the interior of the camper body and adapted to fold said flexible wall portion inwardly when said roof portion is lowered toward said solid wall portion.

4,201,414
CONSTRUCTION FOR THE INTERIOR OF A VAN OR TRUCK

John R. Horton, III, 5947 Boca Raton, Fort Worth, Tex. 76112

Filed Dec. 30, 1977, Ser. No. 865,992
Int. Cl.[2] B60P 3/34
U.S. Cl. 296—169 1 Claim



1. A construction for the interior of a vehicle such as a truck or van, comprising:

(a) a pair of fixed side cabinets in the cargo area of the vehicle's interior, with one of said pair being on the right side and the other being on the left side of the vehicle, and said cabinets being anchored to the vehicle's chassis;

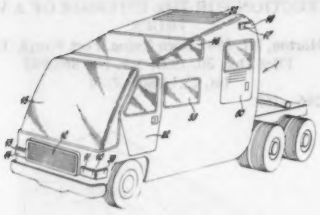
(b) a movable deck having a width such that it extends between the right and left cabinets with relatively small clearance, with said deck having a lower position in which it is adapted to rest directly on top of the vehicle's floor, and said deck having an elevated position in which it lies in a plane which is above and generally parallel to the vehicle's floor, with the elevated position of the movable deck being vertically above the lower position of the movable deck, whereby the longitudinal relationship between the movable deck and the vehicle is the same in both the elevated and lower modes; and

(c) means for selectively holding the deck in its elevated position above the floor, including a pair of spaced structural members at opposite sides of the deck for holding a first end of the deck at a position where the deck is fixed against both vertical and horizontal movement, and said means further including a pivotable member for selectively supporting the second end of the deck at the same height above the floor as the first end, and wherein said pair of structural members for holding a first end of the deck constitute a pair of bolts removably fixed to the respective sides of said deck, and there being a plurality of pairs of mating recesses in said side cabinets for receiving a protruding end of said bolts and holding said bolts against vertical movement when the deck is fully elevated, and said recesses also holding said protruding bolts against movement in a direction parallel to the longitudinal axis of the vehicle, and the recesses on a respective side cabinet being surrounded by a common groove for restricting longitudinal movement of said bolt as said bolt is being moved from one recess to another.

4,201,415
LONG-DISTANCE TRUCK TRACTOR WITH LIVING QUARTERS

Jaroslav Suchanek, 5140 Charles, Detroit, Mich. 48211

Filed Mar. 22, 1978, Ser. No. 889,044
Int. Cl.[2] B62D 27/00
U.S. Cl. 296—190 10 Claims



1. A vehicle provided with living quarters disposed therein, comprising a vehicle body; a first level including a first plurality of equipment and areas disposed within said vehicle body; a second level including a second plurality of equipment and areas disposed within said vehicle body; said second level being disposed above said first level; said first plurality of equipment and areas including a driver control area; said second plurality of equipment and areas including at least one sleeping compartment; an air-cooler operably and mechanically connected with said engine to convey fresh air to said engine and to convey air away from said engine, said air-cooler having an inlet and an outlet; and an engine disposed at the rear of said vehicle body at said first level, wherein the improvement comprises:

a first panoramic window defining a major portion of the front of said vehicle body and having curved wrap-around side edges extending around the front right and left edges of said vehicle body to define a streamlined contour of said first panoramic window;

said air-cooler being aerodynamically disposed in an upper rear roof portion of said vehicle body, and being streamlined;

a second panoramic window disposed between said first panoramic window and said air-cooler, said second panoramic window providing visibility and light for said second level, and defining a first roof portion of said vehicle body;

said second panoramic window being upwardly slanted from a front edge thereof disposed substantially adjacent the upper edge of said first panoramic window to a rear edge thereof, and having curved wrap-around side edges extending around the upper portions of the right and left sides of said vehicle body, to define a streamlined contour of said second panoramic window;

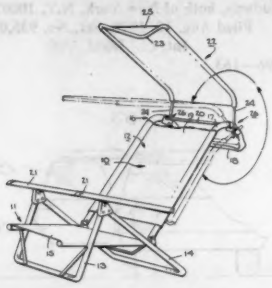
a second roof portion of said vehicle body extending substantially upwardly and continuously from said rear edge of said second panoramic window to a rear portion thereof having said air-cooler disposed therein; and

said first panoramic window, said second panoramic window, and said second roof portion of said vehicle body including said air-cooler disposed therein, together defining an aerodynamically-streamlined upper contour of said vehicle body.

4,201,416
CANOPY CONSTRUCTION FOR OUTDOOR FURNITURE

Robert D. Vanderminden, Granville, N.Y., assignor to The Telescope Folding Furniture Co., Inc., Granville, N.Y.

Filed May 5, 1978, Ser. No. 903,113
Int. Cl.[2] A47C 7/10
U.S. Cl. 297—184 12 Claims



1. The combination of

a collapsible furniture frame having a backrest portion including a frame having a pair of parallel members each having a bent end portion, a cross-bar connecting said bent end portions together and a rod secured between said bent end portions;

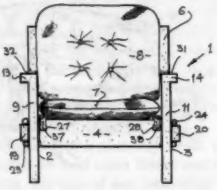
a canopy including a skeletal frame having a pair of legs; and

means pivotally mounting said canopy on said backrest portion, said means including a pair of clamps, each said clamp having a U-shaped portion astride a respective bent end portion, a slot in said U-shaped portion receiving said rod therein, a leg opposite said U-shaped portion and receiving a respective canopy leg therebetween, a bolt passing through said U-shaped portion, said clamp leg and a respective leg of said skeletal frame, and means threaded onto said bolt to tighten said clamp leg against said respective leg of said skeletal frame.

4,201,417
DEMOUNTABLE SEATING FURNITURE

Jeremy N. Griffith, Clothiers Creek Rd., Condong, N.S.W., 2484, Australia

Filed Dec. 18, 1978, Ser. No. 970,168
Int. Cl.[2] A47C 7/00
U.S. Cl. 297—442 3 Claims



1. A demountable article of seating furniture comprising a pair of wooden side frames, a wooden front beam, a wooden rear beam, a wooden backrest, a seat cushion and a backrest cushion; each said wooden side frame having two legs, an armrest connecting the upper ends of said legs and a side member between said legs and connected thereto at a position intermediate between said armrest and the lower ends of said legs, said side member having therethrough a pair of apertures located one adjacent each said leg; each of said wooden front and rear beams having at each end thereof a portion of reduced

dimensions adapted to extend through a co-operating one of said side member apertures and to be secured therein by means of a wooden peg which extends through a vertically-oriented aperture in said reduced portion, and each said front and rear beams having therethrough at least two horizontally-oriented apertures adjacent the top edge thereof; said wooden backrest having a recess in each outer edge thereof, into which slot is receivable a said side frame armrest; said seat cushion having, on the lower surface thereof, a pair of sleeves, one sleeve adjacent the rear edge of said seat cushion and the other adjacent the front edge of said seat cushion, each said sleeve having a rigid slat extending therethrough, said rear slat being removably attachable to said rear beam and said front slat being removably attachable to said front beam by straps each of which extends through a said horizontally-oriented aperture and around an end of a said slat; said backrest cushion resting on said seat cushion and against said wooden backrest.

4,201,418

ANCHORING ARRANGEMENT OF AN END- OR DEFLECTION-POINT OF A SAFETY BELT, ESPECIALLY IN MOTOR VEHICLES

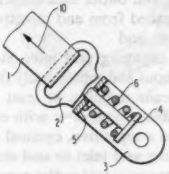
Willi Reidelbach, and Walter Schmid, both of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 915,137

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727123

Int. Cl.[2] A62B *35/00*; A47C *31/00*

U.S. Cl. 297—474 **19 Claims**



1. An anchoring arrangement of an end or deflection point of a safety belt, at a fixed structural part fixed relative to the vehicle under interconnection of a spring means, characterized in that the spring means is installed prestressed in the sense of a tightening of the belt band and is blocked in the prestressed position during normal driving operation, and in that the blocking is released by a force peak with occurs at the beginning of an accident at the belt band and exceeds the prestress force of the spring means, characterized in that an eye means cooperating with the belt band is displaceably guided in a fitting means fixed relative to the vehicle, the fitting means having a bent-off free end which in normal operation blockingly engages in a recess of the eye means, and in that the spring means is supported both at the fitting means as also at the eye means.

4,201,419

CONTROL OF AIRBLAST DURING EXPLOSIVE EXPANSION IN AN IN SITU OIL SHALE RETORT

Ned M. Hutchins, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Aug. 21, 1978, Ser. No. 935,506

Int. Cl.[2] E21C *41/10*

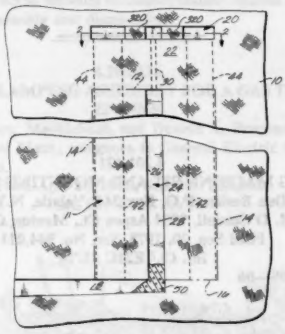
U.S. Cl. 299—2 **21 Claims**

1. A method for attenuating airblast produced by detonating explosive in a subterranean formation containing oil shale for forming a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort, the method comprising the steps of:

excavating underground workings for providing a means for access to a retort site in the formation containing oil shale;

excavating at least one void in formation within the retort site, leaving a remaining portion of unfragmented formation within the retort site adjacent such a void, and leaving a barrier of unfragmented formation between the underground workings and the retort site;

providing at least one gas flow passage extending through the barrier of unfragmented formation between the underground workings and the retort site, the gas flow passage having a cross-section for gas flow which is substantially smaller than the transverse cross-section of the underground workings;



placing explosive in the remaining portion of unfragmented formation within the retort site adjacent such a void;

detonating the explosive for explosively expanding the portion of unfragmented formation toward such a void for forming a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort; and

venting at least a portion of the gas from such explosive expansion from the retort site through the gas flow passage toward the underground workings for limiting the rate of flow of such gas to the underground workings by means of the substantially smaller cross-section of the flow passage so as to attenuate airblast in the underground workings.

4,201,420

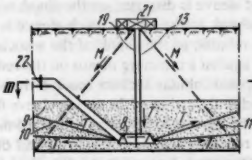
METHOD OF OIL RECOVERY BY THERMAL MINING

Vasily K. Likholai, and Boris A. Tjunkin, both of Komi, U.S.S.R., assignors to Pechorsky Gosudarstvenny Naucnno-Issledovalelsley I Proerthy Institut "Pechornipineft", U.S.S.R.

Filed Aug. 31, 1978, Ser. No. 938,521

Int. Cl.[2] E21B *43/24*; E21C *41/10*

U.S. Cl. 299—2 **7 Claims**



1. A method of oil recovery by thermal mining from oil deposit sections into which a mine field is divided, wherein a plurality of underground workings are provided ensuring a successive recovery of oil from the mine field sections and including intake and development wells, and an overall mine ventilation system is set up ensuring the ventilation of the

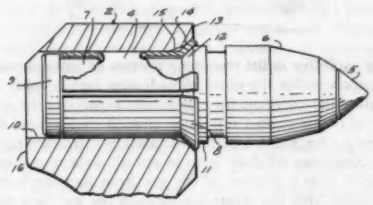
underground workings, after which a flow of heating medium is throttled and force-fed via pipes into the development wells for heating the oil bed to a temperature at which oil assumes the required fluidity in the oil bed, whereupon a fluid medium is force-fed to the intake wells to drive oil from the oil bed into the development wells and pump it out up to the surface, the throttling of the heating medium before the force-feeding of the same automatically controlling the force-feeding of the heating medium to, extracting oil from and cleaning of the development wells.

4,201,421

MINING MACHINE BIT AND MOUNTING THEREOF

Leroy E. Den Besten, P.O. Box 344, Valatie, N.Y. 12184, and James R. O'Connell, 9934 Aspen Ct., Mentor, Ohio 44060

Filed Sep. 20, 1978, Ser. No. 944,011
Int. Cl.[2] E21C *35/18*
U.S. Cl. 299—86 **22 Claims**



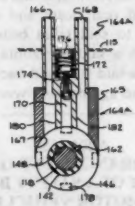
1. The combination in a mining wheel having an axis of rotation with said wheel having a peripheral rim, a series of bit holders in the form of tubular sockets mounted on the rim of the wheel for supporting mining bits, mining bits mounted in said bit holders, said sockets each having at its front end a substantially conical rim, mining bits each having a shank of generally cylindrical form and having conical heads and having cylindrical stems of a diameter smaller than the diameter of the bit heads, said bits supported in said sockets and extending radially and angularly forwardly with respect to the aforesaid sockets and incline forwardly in a direction of rotation of the wheel, said mining bits each having a split tubular spring sleeve having an unstressed diameter greater than the diameter of the sleeve when it is disposed in the socket with the latter diameter greater than that of the diameter of the shank adjacent the sleeve when said sleeve is disposed on the shank so as to allow rotation of the shank in the sleeve, each sleeve is adapted to expand radially relative to the shank of the associated bit and to abut endwise against a retaining means on the rear end of the shank of the bit, said tubular sockets receive the shank of the bit and the cylindrical portion of the spring sleeve for retaining the shank of the bit against longitudinal outward movement of the bit shank, a retaining means at the front end of the shank, said sleeves being mounted on substantially all of the shank of the bit intermediate the retaining means, said sleeves being non-rotational in said sockets and interposed between the shanks of their respective bits and the sockets so as to accept substantially all of the wear on the socket resulting from interaction as between the shanks and the sockets during operation of the wheel with the exception of the wear that might result from interaction of the retaining means with the socket.

4,201,422

FLUID OPERATED ROTARY VALVE

Laddie A. Depas, Sr., Crestwood, Ky., assignor to Maurice L. Miller and Harold W. Thomas, both of Louisville, Ky., part interest to each

Continuation-in-part of Ser. No. 640,865, Dec. 15, 1975, Pat. No. 4,088,375. This application Mar. 16, 1978, Ser. No. 887,122
The portion of the term of this patent subsequent to May 9, 1995, has been disclaimed.
Int. Cl.[2] B60T *13/16*
U.S. Cl. 303—10 **6 Claims**



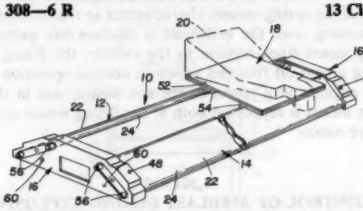
1. A fluid operated rotary valve comprising
inlet means for introducing a fluid to said valve from an external fluid source,
storage means defining a chamber for temporarily storing a quantity of said fluid therein,
outlet means for discharging said quantity from said valve, said inlet, storage and outlet means each defining a fluid access opening spaced from and selectively aligned relative to one another, and
means for slidably engaging said inlet, storage and outlet means in a continuous and substantially fluid tight manner, said engaging means defining at least one slot therein disposed for slidable engagement with each said opening in sequence and in a repetitive, cyclical manner, for slidably interconnecting said inlet to said storage means and, thereafter, said storage to said outlet means during successive portions of each cycle of said slidable engagement.

4,201,423

SYNCHRONIZED TRAVELING CARRIAGE ASSEMBLY

Magnus F. Hagen, Laguna Beach, and Donald Stanley, El Toro, both of Calif., assignors to Standard Precision, Inc., Santa Fe Springs, Calif.

Filed Feb. 2, 1978, Ser. No. 874,385
Int. Cl.[2] F16C *29/00*
U.S. Cl. 308—6 R **13 Claims**



1. A synchronized, traveling, carriage assembly for mounting in various chassis structures, said carriage assembly comprising:
slide means, said slide means including one substantially stationary member, an inner longitudinal slidable member, and an intermediate slidable member;
a carriage means mounted to said inner longitudinal slidable member, whereby said carriage means moves therewith;

a synchronizing means operably interconnecting said slidable members;

a pair of support end caps arranged to receive said slide means therein, each of said end caps comprising an elongated strut body having peripheral wall members defining a cavity therein to receive said stationary member therein;

securing means disposed in said end caps for securing engagement of said slide means, wherein said securing means comprises a plurality of dowel pins disposed in said cavity to be received in said stationary member.

4,201,424

ROLLING BEARING HAVING TWO-SIDED RACE RAILS

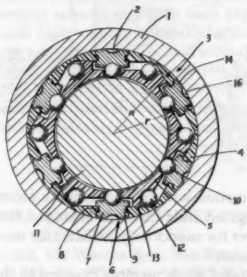
Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 948,089

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 7731603[U]

Int. Cl.² F16C *29/06*

U.S. Cl. 308—6 C **10 Claims**



1. In a rolling bearing for lengthwise movement between the rolling bearing and a shaft, wherein the rolling bearing has a housing with a boring, a plurality of endless rows of rolling elements each having a portion with rolling elements adapted to be radially loaded, a cage in said boring for guiding said rolling elements, and a plurality of race rails supported by said housing and positioned to radially outwardly support said rolling elements in said portion thereof, each race rail having a support surface and a race on its radially outer surface and its radially inner surface; the improvement wherein the radially inner surface and the radially outer surface of the race rails are identical in the longitudinal direction.

4,201,425

LOCKING DEVICE FOR ANTI-FRICTION BEARINGS WITH SPLIT INNER RING

Hans Freund, Schwebheim, and Werner Kotzab, Schweinfurt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

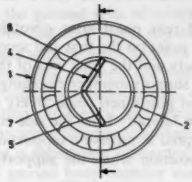
Filed Jul. 26, 1978, Ser. No. 928,248

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 7724545[U]

Int. Cl.² F16C *43/00*

U.S. Cl. 308—236 **10 Claims**

1. A locking device for use during shipment and handling of bearings having a split inner race ring with a central bore, comprising a plate member made of a resilient elastically deformable material having good spring characteristics, said plate member being of generally rectangular configuration and of a predetermined size relative to the bore of the inner race ring so that it is clamped in a radial direction by spring action when deformed and inserted in the bore of both portions of the split inner race ring of the bearing and engages the bore with



only line contact at selected circumferentially spaced locations for ease of assembly and disassembly.

4,201,426

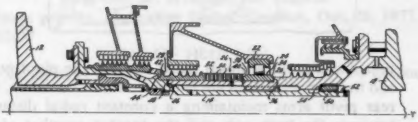
BEARING CLAMPING ASSEMBLY FOR A GAS TURBINE ENGINE

Herbert Garten, Marblehead, and Donald A. Brozenske, Wenham, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Apr. 27, 1978, Ser. No. 900,542

Int. Cl.² F16C *25/08*

U.S. Cl. 308—26 **5 Claims**



1. A bearing clamping assembly for a gas turbine engine comprising:

(a) a first shaft member;

(b) a second shaft member surrounding a portion of said first shaft member;

(c) a bearing assembly supporting one of said shaft members for rotation, said assembly including a race member affixed to said one of said shaft members;

(d) an axially resilient member disposed proximate said bearing assembly and adapted to apply an axial force to said race member; and

(e) clamping means for securing said first shaft member to said second shaft member, said clamping means further adapted to compress said resilient member, said resilient member applying said axial force in response to said compression.

4,201,427

SEWING MACHINE POSITIONER DEVICE

John L. Orr, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Rockford, Ill.

Filed Aug. 7, 1978, Ser. No. 931,486

Int. Cl.² A47B *81/00*

U.S. Cl. 312—21 **33 Claims**

19. A sewing machine head lifter mechanism comprising, in combination:

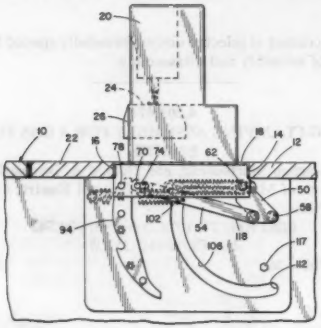
a cabinet having a generally planar working surface with a platform opening through the surface;

a separate platform for mounting a sewing machine head, said platform having a back side, side edges and sized for receipt in the opening and also including a back pivot axis and front support members projecting laterally in opposite directions from the platform, said platform being mounted to pivot about the back axis between a storage position and at least one use position with respect to the working surface;

first and second cabinet bracket members positioned respectively on opposite sides of the platform laterally from the side edges of the platform and in a plane transverse to the back axis;

first and second rear pivot arms pivotally connected between a pivot point on the first and second bracket members respectively and the back axis of the platform;

first and second support member engaging means affixed to the cabinet and positioned respectively on opposite sides of the platform laterally from the side edges, each engaging means adapted to receive a support member in at least one support position when the support member is positioned at a predetermined radial distance the pivot point and the rear pivot arms are in a prescribed orientation, the rear pivot arms maintaining a constant radial distance between the back axis and the bracket member pivot points, said support members having a variable and adjustable radial distance between the front support members and the bracket member pivot points whereby said platform is adjusted in position relative to the working surface by altering the orientation of the rear pivot arms about the pivot point to simultaneously vary the radial distance of the front support members from the predetermined distance and cause disengagement thereof from the engaging means.



4,201,428

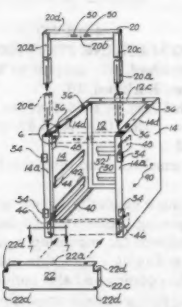
CABINET ASSEMBLY

Frank S. Johnson, Chicago, Ill., assignor to Marvel Metal Products Company, Chicago, Ill.

Filed Dec. 13, 1978, Ser. No. 968,758

Int. Cl.[2] A47B *43/00*

U.S. Cl. 312—257 R **11 Claims**



1. A knockdown cabinet assembly comprising a back panel having inwardly extending top, bottom and side flanges, a pair of side panels having inwardly extending top, bottom, front and rear flanges, the front flange on each of the side panels being formed to provide an elongated open-ended channel, flange receiving means secured on each of the side panels forwardly of and substantially parallel to the rear flange therefor for slidably engaging the inwardly extending side flanges on the back panel, a bottom connecting member and a top connecting member adapted to engage the side panels and to maintain them in fixed spaced apart relation with respect to one another, said top connecting member having downwardly extending portions adapted to be slidably received in the open-ended channel provided by the front flange of the side panels, a top panel having fastening means for securing the top panel on the top flanges of the side panels, and a bottom panel adapted to be supported on the back and side panels is spaced relation to the inwardly extending bottom flanges thereof.

4,201,429

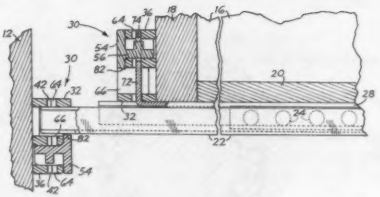
CABINET DRAWER GUIDE AND SLIDE CONNECTOR

David L. Collier, 255 NW. 95th Ave., Portland, Oreg. 97229

Filed Nov. 13, 1978, Ser. No. 959,789

Int. Cl.[2] A47B *88/00*

U.S. Cl. 312—330 R **9 Claims**



4. In combination with a drawer and a cabinet frame,

(a) an elongated slide member arranged for attachment to the drawer for supporting the latter for movement relative to the frame,

(b) an elongated guide member coupled to the slide member and arranged for attachment to the frame,

(c) a connector for attaching at least one of the slide and guide members to the associated drawer and frame, respectively, the connector comprising

(1) a body member having a slot extending inwardly from one side thereof and a transverse opening extending inwardly from a perpendicular side thereof and intercepting said slot,

(2) the elongated member to be attached having a tab projecting laterally therefrom for reception in the slot, the tab having a transverse opening arranged to register with the transverse opening in the body member when the tab is received in the slot, and

(3) a locking member extending retractably through the registering transverse openings in the body member and tab for securing the tab to the body member, and

(d) means for securing the body member to the drawer or cabinet frame to which the elongated member is to be attached.

4,201,430

ROTARY FEED FOR TOMOGRAPHIC SCANNING APPARATUS

Kendall L. Dinwiddie, Palo Alto; Janos A. Racz, San Jose, and Edward J. Seppi, Menlo Park, all of Calif., assignors to General Electric Company, Milwaukee, Wis.

Continuation of Ser. No. 677,939, Apr. 19, 1977, abandoned.

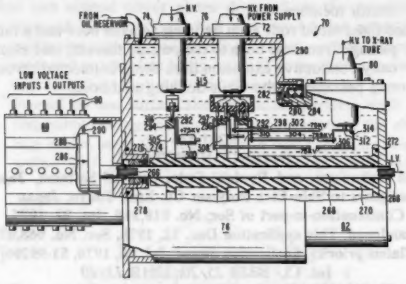
This application Dec. 23, 1977, Ser. No. 863,979

Int. Cl.[2] A61B *6/00, 6/02*; H01R *39/00*

U.S. Cl. 339—5 M **4 Claims**

1. Rotary electrical feed through apparatus comprising first and second end sections and a center section, said first end section being rotatably connected to said center section, three

electrically insulating discs positioned in said center section and supported from said first end section, one of said insulating discs having a first high voltage annular electrical contact mounted thereon, a second one of said insulating discs having mounted thereon second and third high voltage annular electrical contacts which are electrically separated from each other, a third one of said insulating discs having mounted thereon fourth and fifth high voltage annular electrical



contacts which are electrically separated from each other, five high voltage electrical contact members each engaging a respective one of said high voltage annular electrical contacts and supported from said center section, said second end section having an outer shell non-rotatably connected to said center section, low voltage slip rings in said second end section and non-rotatably connected to said first end section, and said outer shell carrying contacts slideably engaging said low voltage slip rings.

4,201,431

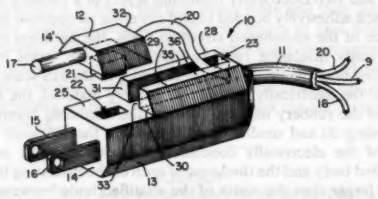
UNIVERSAL ADAPTABLE THREE-PRONG ELECTRICAL PLUG

Ronald T. McDonald, 102 Warren Ave., Marlboro, Mass. 02148

Filed Jun. 28, 1978, Ser. No. 919,864

Int. Cl.[2] H01R *3/06*

U.S. Cl. 339—14 P **8 Claims**



1. A self grounding electric connector plug connected to an electrical device by a 3-wire electric conductor cord comprising two electric conducting wires and a ground wire, said electric connector plug comprising a first body member component and a second body member component for detachable assembly in combination with said first body member component, said first body member component having a vertical planar front face and a bottom mating surface for mating combination with said second body member component, said second body member component having a vertical planar front face and first and second top surfaces comprising front and back mating surfaces for detachable mating combination as desired with the mating surface of said first body member component, a ground prong fixedly mounted in said first body member component and extending outwardly from the said vertical planar front face of said first body member component, two electric contact blades fixedly mounted in said second body member component and extending outwardly from said vertical planar front face of said second body member component, said 3-wire electric conductor cord being located in said second body member component, the said two electric conducting wires of which are connected to said electric contact blades and the ground wire of which is connected to the ground prong in said first body member component, a portion of said ground wire between said first and second body member components being exposed and free to move as said first body member component is detachably connected to said front and back mating surfaces of said second body member component whereby when the mating surface of the first body member component is detachably connected to the front mating surface of said second body member component the said vertical planar front faces are in the same vertical plane and a 3-prong electric connector plug is provided, and when the mating surface of the first body member component is detachably connected to the back mating surface of the second body member component, a connector plug is provided capable of automatic grounding for use with a two wire electrical outlet, the ground prong in use of the electric plug making contact with the grounding screw in an electrical outlet plate.

4,201,432

ELECTRIC CONNECTORS

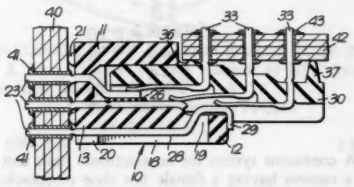
Walter M. Chalmers, Dundee, Scotland, assignor to Ferranti Limited, Hollinwood, England

Filed Oct. 17, 1978, Ser. No. 952,078

Claims priority, application United Kingdom, Oct. 28, 1977, 45252/77

Int. Cl.[2] H01R *3/04*

U.S. Cl. 339—14 R **4 Claims**



1. An electrical connector comprising a socket member, an insulating housing for the socket member in which are located a plurality of rigid conductive contact members arranged in a number of parallel rows separated from but overlapping one another, one row of contact members being provided by a single continuous contact member extending over the full length of the row, and a plug member comprising an insulating body member in which are located a plurality of resilient conductive contact members arranged in a number of parallel rows so as to cooperate with the rigid contact members carried by the socket members, the resilient contact members being so arranged that they all deflect in the same direction on insertion or removal of the plug member into or from the socket member.

4,201,433

GROUNDING CONNECTOR

Dan H. Caldwell, Red Bank, N.J., assignor to Fargo Manufacturing Company, Inc., Poughkeepsie, N.Y.

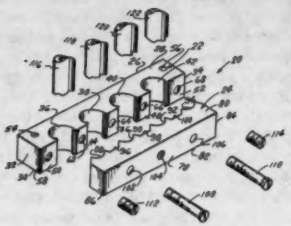
Filed Jul. 6, 1978, Ser. No. 922,286

Int. Cl.[2] H01R *3/06*

U.S. Cl. 339—14 L **12 Claims**

1. A grounding connector comprising: a base plate having a plurality of grooves for metal clad telephone cables, a pressure pad adapted to be removably coupled with the base plate to facilitate retention of the metal clad telephone cables in the grooves, means on the connector for connecting to ground,

and each groove having a configuration including an inwardly extending interferring surface on the surfaces forming each



groove in position to engage and assist in retaining the metal clad telephone cables therein and grounding the cables.

4,201,434

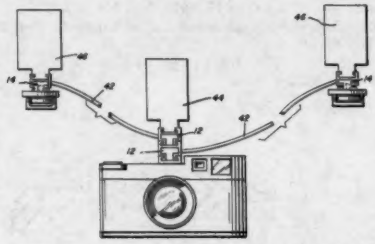
PHOTOGRAPHIC EXTENSION FLASH CORD

Albert Tureck, 3728 W. Enfield, Skokie, Ill. 60076

Filed Jan. 18, 1978, Ser. No. 870,327

Int. Cl.[2] G03B *15/05, 15/07*

U.S. Cl. 339—28 **1 Claim**



1. A connector system for an electronic flash unit for use with a camera having a female hot shoe receptacle, which comprises:

a first connector member comprising a lower portion and upper portion, the lower portion including a male hot shoe plug for electrically and mechanically engaging the female hot shoe receptacle of a camera, the upper portion comprising a female hot shoe receptacle for enabling connection thereto of an electronic flash unit having a male hot shoe connector, with the electronic flash unit being connected directly to said upper portion instead of being connected directly to the camera's female hot shoe receptacle;

said first connector member upper portion comprising a pair of metal rods fixed to an insulative support and said first connector member lower portion comprising a pair of metal rods movable relative an insulative support and are coaxial with said fixed metal rods;

means electrically coupling said upper portion to said lower portion so as to provide an electrical connection from the camera female hot shoe receptacle to the upper portion's hot shoe receptacle when the first connector member is connected to the camera, said electrically coupling means comprising metal spring means coupling said metal rods, said metal spring means encircling said metal rods and biasing said movable metal rods downwardly;

electrically conductive extension lines in electrical contact with said first connector member, and means connecting said electrically conductive extension lines to said metal rods;

a second connector member comprising a lower portion and an upper portion, the upper portion of the second connector member comprising a female hot shoe receptacle and the lower portion of said second connector member defining a threaded aperture for receiving a tripod mount;

said second connector member upper portion comprising a pair of metal rods fixed to an insulative support; and

means connecting the electrically conductive extension lines to the fixed metal rods of said second connector member, whereby an electrical connection is provided, when the first connector member is connected to the camera, from the camera female hot shoe receptacle to the second connector member;

said fixed metal rods each defining an axial bore and a radial passage from said bore to the outside thereof; said electrically conductive extension lines being connected through said passages to the walls defining said bore.

4,201,435

INTERCONNECTORS

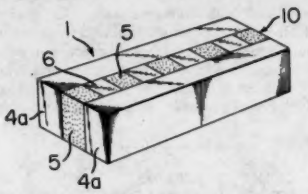
Akio Nakamura, and Ryoichi Sado, both of Saitama, Japan, assignors to Shin-Etsu Polymer Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 818,218, Jul. 22, 1977, abandoned. This application Dec. 12, 1978, Ser. No. 968,676

Claims priority, application Japan, Jul. 26, 1976, 51-99296[U]

Int. Cl.[2] B32B *25/20;* H01R *13/40*

U.S. Cl. 339—59 M **1 Claim**



1. An interconnector comprised of a rod-shaped stratified body with a rectangular cross section formed with strata of an electrically insulating rubbery material and strata of electrically conducting rubbery material in an alternate stratification along the longitudinal direction of the rod-shaped stratified body and two electrically insulating layers of a rubbery material each adhesively bonded to and covering an opposite lateral surface of the rod-shaped stratified body, the hardness of the electrically insulating rubbery material for the strata in the stratified body being smaller by at least 5 in the JIS scale than that of the electrically conductive rubbery material, the hardness of the rubbery material forming the insulating layers not exceeding 50 and smaller by at least 10 in the JIS scale than that of the electrically conductive rubbery material in the stratified body and the thickness of each of the insulating layers being larger than the width of the stratified body between the opposite surfaces to which the insulating layers are bonded.

4,201,436

MINIATURE MATRIX ASSEMBLY

David L. Genovese, Spring Valley, and Miklos Madarasz, Bedford, both of N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.

Filed Sep. 14, 1978, Ser. No. 942,347

Int. Cl.[2] H01R *9/08*

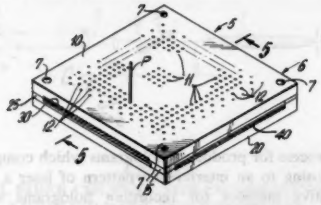
U.S. Cl. 339—96 **4 Claims**

1. A miniature matrix assembly comprising:

first and second substantially flat-conductor cables each including a plurality of parallel, elongated conductors embedded in a sheet of resilient electrically non-conductive insulation material such that each conductor is fully insulated from the conductor adjacent thereto, the conductors of each cable being spaced at 0.050 inch intervals, each conductor being a stranded wire of annular cross-section such that the sheet of insulation material conforms

to the configuration of said conductors to define upper and lower corrugated surfaces of the flat cable having ridges and valleys when viewed in cross-section, the longitudinal axis of said second flat conductor cable being disposed perpendicular to the longitudinal axis of said first flat conductor cable, said first and second flat conductor cables being in abutting planar relationship along a surface thereof to define a matrix of cross-over points of the respective conductors;

first and second cover plates disposed on the respective opposed surface of said first and second flat conductor cables opposite to said abutting contact surfaces thereof, each said cover plate being made of an insulative material and including a plurality of elongated, parallel grooves formed on one surface thereof for cooperation with the respective corrugated surface configuration of the abutting cables, such that the ridges of said cables are seated within said grooves, each of said cover plates being



formed with a plurality of programming holes spaced at 0.050 inch intervals and positioned in alignment with the cross-over points of the respective conductors in the first and second flat conductor cables, each of said first and second cover plates further including a plurality of termination apertures spaced in staggered relationship at 0.100 inch intervals such that a plurality of termination apertures is provided at 0.050 intervals; and

fastening means for holding said first and second cover plates, and the first and second flat conductor cables sandwiched therebetween in fixed relationship for receiving conducting connecting pins inserted through the programming holes in the first cover plate and then through the insulation and stranded conductors of said first and second conductor cables, for electrically interconnecting selected intersecting conductors of said first and second flat conductor cables, the insulation material of said cables effecting an hermetic seal around said pin upon insertion thereof.

4,201,437

MOUNTING ARRANGEMENT FOR ELECTRICAL PLUG-IN COMPONENTS

John Lockyer, Smithtown, N.Y., assignor to Deutsch Relays, Inc., Long Island, N.Y.

Filed Jun. 2, 1978, Ser. No. 911,891
Int. Cl.[2] H01R *13/60*
U.S. Cl. 339—121 **25 Claims**

1. A device for releasably retaining a duality of plug-in components in a mated position comprising,

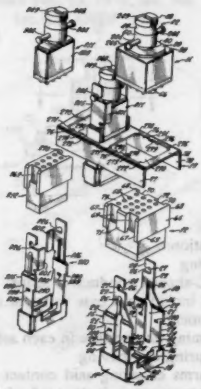
a first member having a component mounting opening therein, said first member including means defining holding finger means projecting into said opening,

a retainer assembly extending through said opening and having a first portion on one side of said opening, said assembly including

means on said first portion for mounting a first electrical component adjacent one side of said opening,

first and second retainer elements extending through said opening, at least one of said elements including means for defining a recess therein receiving said holding finger means and preventing movement of said assembly in at least one direction relative to said first member,

at least said one element being displaceable to shift said recess from said holding finger means to allow insertion and withdrawal of said retainer assembly into and from said opening,



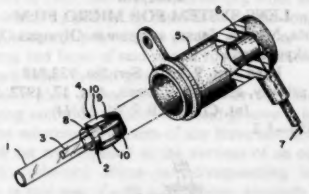
said retainer assembly including means on portions of said retainer elements remote from said first portion for securing a second electrical component thereto in mating relation to said first electrical component.

4,201,438

SPRING CONTACT FOR ARC DISCHARGE TUBE BASE

Richard J. Shea, Danvers, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 2, 1978, Ser. No. 947,668
Int. Cl.[2] H01J *5/50*
U.S. Cl. 339—144 R **1 Claim**



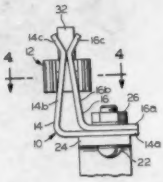
1. An arc discharge tube having a metal end cap at its end electrically connected to a discharge electrode in the arc tube, the end cap having a bowed spring contact fastened thereto, the spring contact being the support means and the electrical connection means for the arc tube when it is inserted into a socket, the end cap comprising a larger diameter shoulder and a smaller diameter terminal portion, said shoulder fitting over the end of the arc tube and being cemented thereto, the spring contact being fastened to the end of said terminal portion, said spring contact comprising arms extending from a center portion, the center portion being fastened to the end of said terminal portion, said arms forming a basket around the end cap and extending to the shoulder thereof but being spaced therefrom, the largest diameter of said basket being about midway between the shoulder and the terminal portion end, wherein said arms can be pressed into contact with said shoulder, and can be compressed further, when the end cap is inserted into a suitable socket.

4,201,439

METER JAW AND SPRING CLIP ASSEMBLY

Andre J. M'Sadoques, Southington, Conn., assignor to General Electric Company, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,427
Int. Cl.[2] H01R 11/22
U.S. Cl. 339—259 R 5 Claims



1. In combination:

A. a jaw including

(1) a pair of L-shaped conductive strips,

(2) each strip including a base segment and an upstanding contact segment,

(3) means forming an aperture in each said base segment;

B. a C-shaped spring clip having

(1) opposed arms engaging said contact segments to hold said contact segments in juxtaposed relation, whereby said base segments assume a lapped relationship with said apertures in substantial registry to accommodate a bolt clamping said jaw in electrical connection with a conductive member, and

(2) an upstanding guide tab on said spring clip integrally located intermediate said arms and arranged transversely of said contact segments to serve in directing the insertion of a stab connector into electrical engagement with said jaw between said contact segments; and

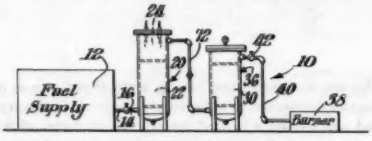
C. interengaging detent means formed in said contact segments and said clip arms to hold said contact strips and spring clip in assembly.

4,201,440

LENS SYSTEM FOR MICRO FILM

Koichi Yuta, Mitaka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1978, Ser. No. 932,218
Claims priority, application Japan, Aug. 17, 1977, 52/98437
Int. Cl.[2] G02B 9/64, 13/14
U.S. Cl. 350—1.2 3 Claims



1. A lens system for micro film comprising a first negative cemented doublet lens component, a second positive lens component, a third positive lens component, a fourth positive lens component, a fifth positive lens component, a sixth negative cemented doublet lens component, a seventh negative meniscus lens component, an eighth cemented doublet meniscus lens component and a ninth positive meniscus lens component, and said lens system satisfying the following conditions:

(1) $-14f<r_7<-11f$

(2) $0.31f<r_{14}<0.35f$

(3) $-1.2f<r_{15}<-0.8f$

(4) $-2.1f<r_{16}<-2.0f$

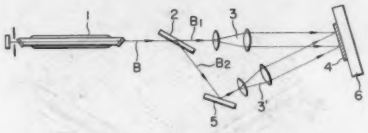
wherein the reference symbols r_7, r_{14}, r_{15} and r_{16} represent radii of curvature on the image side surface of the third lens component, the image side surface of the sixth lens component, the object side surface and the image side surface of the seventh lens component, and the reference symbol f designates focal length of the entire lens system as a whole.

4,201,441

HOLOGRAM AND METHOD OF PRODUCTION THEREOF

Masakazu Matsumoto, Yokohama; Koujiro Yokono, Kawasaki; Takashi Tanaka, Tokyo; Shigeo Toganou, Tokyo; Hiroyoshi Kishi, Tokyo, and Katsuhiko Nishide, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1979, Ser. No. 4,607
Claims priority, application Japan, Jan. 26, 1978, 53-8041; Jan. 27, 1978, 53-8137
Int. Cl.[2] G03H 1/00; G02B 1/04
U.S. Cl. 350—3.61 20 Claims



1. A process for producing holograms which comprises

(i) exposing to an interference pattern of laser a film-like sensitive member for recording holograms which is mainly composed of a polymer selected from the group consisting of polyvinylcarbazole, alkyl-substituted derivatives thereof and halogen-substituted derivatives thereof and is sensitized to a radiation by using an iodine compound,

(ii) swelling the sensitive member in a first solvent until a volume of the sensitive member becomes 120% or more based on the volume immediately after the exposure and simultaneously eluting most of the iodine compound, and

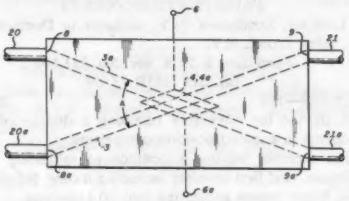
(iii) transferring the sensitive member into a second solvent to treat the sensitive member until the volume of the sensitive member becomes 110% or less based on the volume immediately after the exposure.

4,201,442

LIQUID CRYSTAL SWITCHING COUPLER MATRIX

Donald H. McMahon, Carlisle, and Richard A. Soref, Newton Centre, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,983
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.14 12 Claims



1. Electrooptical switch means comprising:

first dielectric plate means having first planar surface means,

first internal channel optical wave guide means having first boundary means at said first planar surface means,

second dielectric plate means having second planar surface means,

second internal channel optical wave guide means having

second boundary means at said second planar surface means,

said first and second dielectric plate means being disposed with said first and second surface means in facing spaced parallel relation so that said first and second internal channel optical wave guide means cross one over the other for forming a cross-over region,

liquid crystal fluid means disposed between said first and second surface means, and

means for selectively applying an electric field in said liquid crystal fluid means substantially only at said crossover region, including first and second transparent electrode means respectively affixed in opposed facing relation to said first and second planar surface means and to said first and second boundary means,

said first and second internal channel optical wave guide means being formed in situ by permanent induction of first and second regions of increased index of refraction at said first and second planar surface means.

4,201,443

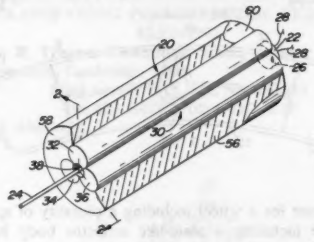
OPTICAL FIBER COUPLER FOR INTERFACING WITH LIGHT SOURCES AND DETECTORS

Malcolm H. Hodge, Claymont, Del., assignor to TRW Inc., Elk Grove Village, Ill.

Filed Nov. 25, 1977, Ser. No. 854,925

Int. Cl.² G02B 5/14

U.S. Cl. 350—96.20 **9 Claims**



1. An optical fiber coupler for interfacing with a light active element, said coupler comprising a guide assembly having at least three glass elongated members having cylindrical surface portions, said members being disposed in a side-by-side array parallel to one another with longitudinal peripheral surface portions of adjacent members in contact and connected to each other to form a cusp-shaped interstitial channel therebetween; said assembly including a flat first end, an optical fiber having a first and second flat end disposed within said channel and secured in place therein, with said fiber second end being located at an intermediate portion along said channel, with said fiber first end being co-planar with the flat first end of said guide assembly, said light active element being mounted directly on and secured to the first end of the guide assembly and being aligned with the first end of said optical fiber to form a good light transmissive interface; said interstitial channel having an open end oppositely disposed to said light-active element for reception of optical fiber ends adapted to engage said optical fiber flat second end disposed in said channel intermediate portion for purposes of effecting good light transmissive connections therewith.

4,201,444

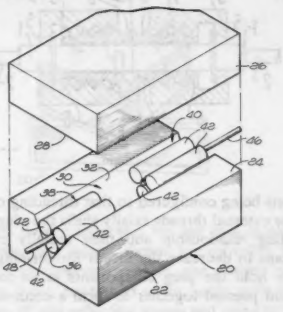
SINGLE OPTICAL FIBER CONNECTOR

Ronald L. McCartney, Orange; Bruce K. Arnold, El Toro, and Vaughn C. Hogan, Sun Valley, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 680,171, May 26, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,262

Int. Cl.² G02B 5/14

U.S. Cl. 350—96.21 **46 Claims**



1. A fiber optic connector for coupling a pair of single optical fibers comprising:

a base plate having a groove in the upper surface thereof, said groove including a pair of planar sides that intersect below said surface at an angle of 60° and extend to said surface;

a pair of like-sets of equal diameter cylindrical rods lying lengthwise in said groove, each said set of rods having adjacent circumferential surfaces providing at least one interstitial space between said rods for receiving an optical fiber;

the region of said groove in which said sets of rods lie being continuous;

all the rods of each said set of rods having front ends lying in a common plane lying transverse to the longitudinal axes of said rods providing a mating end face;

said mating end faces of said sets of rods substantially abutting each other in said groove;

compression plate means mountable over said surface for arranging said rods of each set in said groove in indentical patterns wherein the centers of any three contiguous rods of each set are disposed at the vertices of an equilateral triangle, whereby fibers in corresponding interstitial spaces in said sets of rods will become precisely laterally aligned; and

said sets of rods being laterally removably mounted in said groove and being unattached to said compression plate means.

4,201,445

PLUG CONNECTION FOR LIGHT-WAVE CONDUCTORS

Dieter Kunze, Neuried, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 28, 1978, Ser. No. 901,000

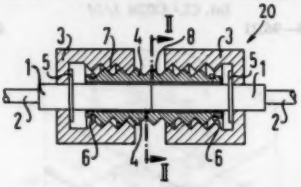
Claims priority, application Fed. Rep. of Germany, May 24, 1977, 2723440

Int. Cl.² G02B 5/14

U.S. Cl. 350—96.21 **12 Claims**

1. A releasable connecting device for light-wave conductors disposed in concentric plug components, the device comprising sleeve means for telescopically receiving the components, said sleeve means having external threads and being provided with means for forming at least one lengthwise extending slot,

said sleeve means having means for forming a bore for receiving the plug components containing the light-wave conductors and enabling axial movement of the components within the means for forming the bore, and locking nuts acting on the external threads of the sleeve means, each of said locking nuts having a surface for engaging the component and applying an axial force thereto, said threads of the sleeve means and the



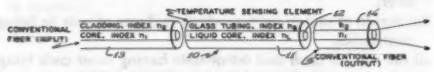
locking nuts being configured so that threading of the locking nuts on the external threads axially shifts the plug components into abutting relationship and then radially constricts the sleeve means to decrease the means for forming the bore to frictionally hold the plug components in an axially aligned position and pressed together to form a connection therebetween.

4,201,446

FIBER OPTIC TEMPERATURE SENSOR USING LIQUID COMPONENT FIBER

John J. Geddes, Minneapolis, and G. Benjamin Hocker, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 20, 1978, Ser. No. 953,154
Int. Cl.[2] G02B 5/16; G01K 11/12
U.S. Cl. 350—96.29 **6 Claims**



1. Remote optical type temperature sensor apparatus comprising:

a length of multi-mode optical fiber having a core and a cladding for transmitting light therethrough and having an input end adapted to be light excited and an output; and,

a temperature-sensing optical fiber section, positioned at a selected point in the length of optical fiber, the section having a transparent liquid component and a transparent solid component, one of said components comprising a core and the other component a cladding surrounding the core, the transparent solid component having a predetermined index of refraction, the transparent liquid component having a temperature dependent index of refraction so that the light transmitted by said temperature section is a function of sensed temperature.

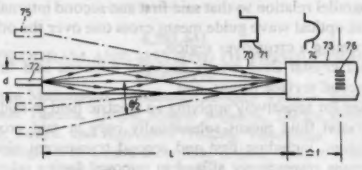
4,201,447

TERMINATION FOR GRADED INDEX FIBER

George H. B. Thompson, and Peter R. Selway, both of Sawbridgeworth, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 26, 1978, Ser. No. 918,994
Claims priority, application United Kingdom, Jul. 21, 1977, 30647/77
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.31 **9 Claims**

1. A graded index optical fibre terminating in a coupling piece of step index fibre whose numerical aperture is matched with or greater than that wherein the cores of the abutting ends of said fibres have matching cross-sections, and wherein the length of the coupling piece of step index fibre is at least that



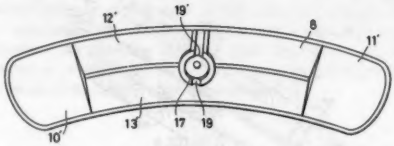
at which the calculated lateral spacing of the first images in the graded index fibre of the remote end of the step index fibre is matched with or smaller than the maximum detail observable in the highest propagating mode of the step index fibre.

4,201,448

REFLECTOR FOR SPOKEWISE WHEELS

Joe Kagayama, Osaka, Japan, assignor to Tsuyama Manufacturing Company, Ltd., Osaka, Japan

Filed Jul. 28, 1978, Ser. No. 928,851
Int. Cl.[2] G02B 5/12
U.S. Cl. 350—99 **3 Claims**

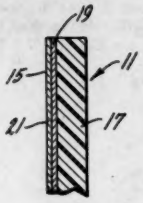


1. A reflector for a wheel including a plurality of spokes, said reflector including a plate-like reflector body having reflective surfaces each provided with reflective zones capable of reflecting incident light in generally parallel relation thereto, the improvements comprising a through hole in said reflector body, a nut portion which is coaxially movable in the through hole, a hook member formed integrally with one end face of said nut portion and extending therefrom in the axial direction, a bolt portion coacting with said nut portion and adapted to firmly press a spoke against the inside face of said hook member by virtue of the extremity of said bolt portion, a fixing means for retaining the bolt portion on its opposite side through said through hole in a state where the spoke is firmly pressed against the inside face of said hook member and the spoke is in abutting engagement with reflector, said fixing means including the bolt portion and a spring washer between the head of the bolt portion and the reflector body, and a rotation-restraining means for preventing rotation of said plate-like reflector body relative to the spokes, said rotation-restraining means comprising a groove in the reflector body, said spokes being inclined with respect to a plane through the wheel at a predetermined angle, and the axis of said through hole being perpendicular to said spoke to which the reflector body is secured.

4,201,449
SCREEN

John S. Campion, 667 W. Wrightwood, and Van E. Steed, 104 W. Natoma, both of Addision, Ill. 60101

Filed May 18, 1978, Ser. No. 907,137
Int. Cl.[2] G03B 21/56
U.S. Cl. 350—117 6 Claims

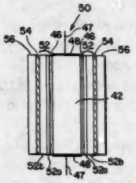


1. A photographic front projection screen including:
a base having a front surface to face a projection source, and
a coating of reflective aluminum ink applied to the front surface of said base.

4,201,450
RIGID ELECTRO-OPTIC DEVICE USING A TRANSPARENT FERROELECTRIC CERAMIC ELEMENT

Giorgio B. Trapani, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 3, 1978, Ser. No. 893,195
Int. Cl.[2] G02F 1/05; G02C 7/12
U.S. Cl. 350—150 29 Claims

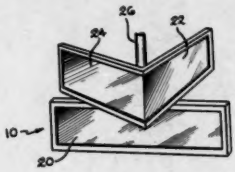


1. An electro-optic phase retardation device comprising an optically transparent lanthanum-modified lead zirconate titanate electro-optic ceramic element exhibiting substantially isotropic properties in a quiescent state and quadratic electro-optic properties in a field-induced state, said electro-optic ceramic element having substantially parallel optical quality surfaces, electrode means for applying an electric field to said electro-optic ceramic element in a plane normal to the direction of propagation of light through the electro-optic device; and isotropic sheet elements bonded to said electro-optic ceramic element in sandwich-like configuration with an adhesive effective to provide a rigid boundary between the interfaces of said ceramic electro-optic element and isotropic sheet elements.

4,201,451
WIDE ANGLED REAR VIEW MIRROR APPARATUS

Keith D. Jacob, Ann Arbor, Mich., assignor to Donald F. Hassinger, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 846,835, Oct. 31, 1977, abandoned, and a continuation-in-part of Ser. No. 720,150, Sep. 3, 1976, abandoned. This application Apr. 17, 1978, Ser. No. 896,895
Int. Cl.[2] G02B 5/08; G02F 1/13
U.S. Cl. 350—278 16 Claims

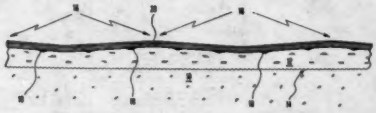


1. Rear view mirror apparatus for use in a motor vehicle comprising reflecting means, means for movably mounting said reflecting means to said vehicle, one portion of said reflecting means being positioned at an angle with respect to another portion of said reflecting means and being in a position to enlarge the area of vision to the right rear of the vehicle, said other portion of said reflecting means being in a position to enlarge the area of vision to the left rear of the vehicle, a voltage source, a single thickness of liquid crystal solution covering each of said portions, said solution being substantially opaque when a voltage is applied thereto and transparent in the absence of said voltage, circuit means connecting said voltage source to said solution covering each of said portions thereby providing for the nonreflectivity of said portions, and means operatively associated with said circuit means and operable to provide for the removal of the voltage from the solution covering a selected one of said portions to enable said selected portion to become reflective while the nonreflectivity of said other portion is maintained.

4,201,452
REFLECTOR FOR AUTOMOBILE HEADLIGHTS

Olivier Puyplat, Paris, France, assignor to Societe Industrielle de Mecanique, Lyons, France

Division of Ser. No. 833,123, Sep. 14, 1977, Pat. No. 4,147,565. This application Mar. 12, 1979, Ser. No. 19,373
Claims priority, application France, Sep. 30, 1976, 76 29355
Int. Cl.[2] G02B 5/08
U.S. Cl. 350—288 11 Claims

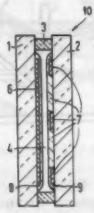


1. A reflector for automobile headlights, comprising a stamped unpolished sheet of metal;
a coating thereon including a layer of a thermally fixed pulverulent dressing;
a layer of varnish upon said coating;
and a film of aluminium adhered to the layer of varnish;
the reflecting surface of said reflector having large-amplitude and shallow-depth undulations.

4,201,453
LIQUID CRYSTAL CELL HAVING AN INSULATING LAYER OF A SILICON OXIDE BASE

Manfred Kobale, Faistenhaar; Hans Pink, Starnberg, and Helwig Schaefer, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,004
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722871
Int. Cl.² G02F 1/13
U.S. Cl. 350—340 16 Claims

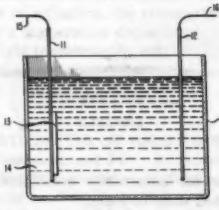


1. In a liquid crystal cell having a pair of spaced carrier plates with inner surfaces forming a cavity for receiving a layer of liquid crystal material, each of said inner surfaces being provided with conductive coatings, at least one of the carrier plates having its conductive coating provided with an insulating layer of a silicon oxide base with the improvement comprising wherein the insulating layer of silicon oxide contains an additive selected from a group consisting of boron oxide, tin oxide, titanium oxide and mixtures thereof so that the insulating layer causes homeotropic orientation of the molecules of the liquid crystal layer.

4,201,454
HEAT TREATED ELECTROCHROMIC DEVICES

Gerardo Beni, Westfield, and Joseph L. Shay, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 27, 1978, Ser. No. 919,418
Int. Cl.² G02F 1/17
U.S. Cl. 350—357 6 Claims

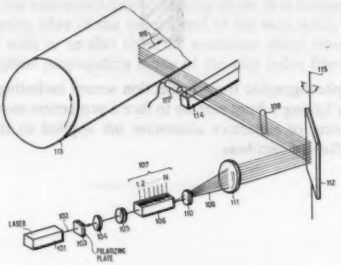


1. An electrochromic device comprising a first electrode and a second electrode contacted with an electrolyte CHARACTERIZED IN THAT said first electrode contains anodic iridium oxide, which has been heat treated at a temperature in the range from 40 to 100 degrees C.

4,201,455
LASER-OPERATED APPARATUS FOR DATA AND SIGNAL RECORDING

Peter Vadász; Szabolcs Tökés; Attila L. Márkus; Károly Balazs; Endre Pólya, all of Budapest; András Tallér, Solymár, and András Podmaniczky, Budapest, all of Hungary, assignors to MTA Szamitastechnikai es Automatizalasi Kutato Intezet, Budapest, Hungary

Filed Dec. 2, 1977, Ser. No. 857,189
Claims priority, application Hungary, Dec. 15, 1976, MA 2841
Int. Cl.² H04N 5/84
U.S. Cl. 350—358 7 Claims



1. A laser-operated apparatus for data and signal recording comprising:

a laser light source generating a collimated laser beam;

an acousto-optical light intensity modulator in the path of said collimated laser beam for producing a plurality of outgoing laser beams angularly separated in a first deflection plane, said modulator including a body transparent to the light of said beams, said outgoing beams being separately intensity modulatable for each to represent a respective information channel; transducer means coupled to said body of said acousto-optical light intensity modulator and comprising a plurality of separately controllable ultrasonic transducer segments arranged in a linear array in the direction of laser beam propagation within said body on a common plane of said body, said common plane making substantially a Bragg angle with said collimated laser beam propagating within said body;

beam deflecting means arranged in the path of said outgoing laser beams in a second deflection plane to provide line scanning in an image plane;

recording means with a light sensitive surface in said image plane for recording the light channel information of said intensity modulated and deflected outgoing laser beams impinging on said image plane; and

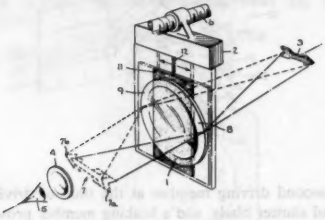
a control unit for controlling said acousto-optical light intensity modulator in accordance with data and signals to be recorded comprising a plurality of control stages, each being coupled to a respective one of said transducer segments for exciting segment with a signal composed of at least one amplitude modulated very high frequency carrier, each of said control stages comprising at least one very high frequency oscillator for producing a respective one of said carriers being associated with one of said information channels, and means for modulating the carrier signals of each of said oscillators to produce intensity modulation of the outgoing beams associated with the information channels corresponding to the carriers of said stage.

4,201,456

METHOD AND APPARATUS FOR DETECTING THE FOCUSING CONDITION OF AN OPTICAL SYSTEM

Mryon L. Wolbarsht, 1435 Acadia St., Durham, N.C. 27701

Filed Apr. 22, 1976, Ser. No. 679,318
Int. Cl.[2] G03B 3/10
U.S. Cl. 353—101 42 Claims



1. Apparatus for enabling the visual perception by the eye of an observer of the focusing condition of an optical system at an image plane of an optical system when the optical system is forming an image at the image plane of the optical system from light from an object disposed at an object plane of the optical system, the apparatus comprising:

a movable mask of material capable of preventing the transmission of light with respect to any portion of the light within its periphery, the mask being adapted to alternately obstruct different portions of the light from the object to produce at least first and second images of the object from the portions of the light from the object which are not obstructed, each of the portions of the light being obstructed being a major portion of all of the light from the object, the first and second images of the object being produced at a predetermined plane extending substantially parallel to the image plane of the optical system, each of the first and second images resulting from light from the object passing adjacent a different opposite side of the mask in the direction of the movement of the mask, when the mask is alternately in at least first and second positions disposed along a predetermined line extending transversely to the optical axis of the optical system, the first and second images being substantially coincident when the optical system is in focus and being displaced with respect to one another substantially in the direction of the predetermined line when the optical system is out-of-focus, said mask provides a continuum of images of said object at said predetermined plane when moved through a continuum of states between said first and second positions, said continnum of images being coincident when said optical system is in focus and displaced when said optical system is out-of-focus;

means for moving said movable mask linearly in substantially the direction of the predetermined line and alternately between the first and second positions at a predetermined frequency determined by the persistence of vision of the human eye, sufficient to create an apparent moving image when the optical system is out-of-focus, said means for alternately moving said mask from said first position to said second position going through said continuum of positions, whereby a continuously moving image is provided when said optical system is out-of-focus; and

means for presenting said apparent moving image as a visual image to the eye of the observer to thereby enable the visual perception of said apparent moving image.

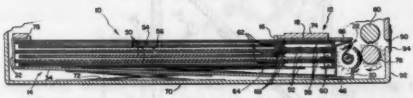
994 O.G.—7

4,201,457

PHOTOGRAPHIC FILM ASSEMBLAGE HAVING INTERCONNECTED FILM UNITS

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1978, Ser. No. 974,360
Int. Cl.[2] G03B 17/52, 1/02
U.S. Cl. 354—86 5 Claims



1. A photographic film assemblage for use with a camera of the self-developing type including a pair of elongate rollers, at least one of which includes a gear at one end thereof, and an exit opening through which a film unit may be moved to the exterior of the camera, said photographic film assemblage comprising:

a film cassette having an exposure opening through which a film unit is adapted to be exposed, an egress opening through which a film unit is adapted to be moved subsequent to exposure, and a slot through which a portion of a gear is adapted to extend;

a plurality of self-developing type film units oriented in a stack within said film cassette with an endmost film unit having its photosensitive layer located in alignment with said exposure opening and a leading end thereof carrying a rupturable container of processing liquid located in alignment with said egress opening;

means for resiliently biasing said film units toward said exposure opening;

an elongate tab secured to each of said film units, each of said tabs includes a first end secured to said leading end of each of said film units, and a second unattached end;

means for connecting said tab on one of said film units to the tab on the next adjacent film unit, said connecting means comprising a strip of flexible sheet material having one end thereof fixedly secured to a take-up reel and extending therefrom into detachable connection with each of said tabs;

a take-up reel including a shaft rotatably mounted within said film cassette for winding said strip thereupon as said film units are moved through said egress opening; and

a gear fixedly attached to said shaft such that a portion thereof extends through said slot in said film cassette where it is adapted to be meshed with the gear on the elongate roller of the camera, whereby rotation of said shaft by an exteriorly applied manual force is effective to rotate the elongate roller and to wind a portion of said strip upon said take-up reel while simultaneously moving said second end of said tab on said endmost film unit through said egress opening and into the bite of the elongate rollers which continue the advancement of said second end of said tab through the exit opening in the camera to a position whereat it may be manually grasped and pulled, subsequent to the exposure of said endmost film unit, to draw said endmost film unit through the elongate rollers while simultaneously moving said tab on the next adjacent film unit toward the bite of the rollers.

4,201,458

SINGLE LENS MIRROR REFLEX STUDIO CAMERA IN WHICH QUICK RETURN MIRROR CLOSES FLASH CONTACT

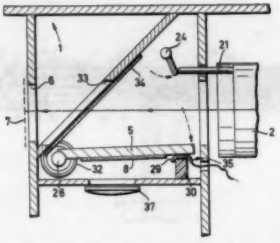
Rudolf Viering, Cologne, Fed. Rep. of Germany, assignor to Pixyfoto GmbH, Cologne, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 878,107

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 2706734

Int. Cl.[2] G03B *15/03, 19/12*

U.S. Cl. 354—136 **8 Claims**



1. In a single lens mirror reflex camera for studio use in which exposure of the film is synchronized with activation of a flashbulb and in which a mirror is movable from a focusing to a picture-taking position, wherein the improvement comprises the following features:

(a) the movable mirror is carried on a shutter cap;

(b) the movable mirror and shutter cap are mounted on a shaft driven by a rotary electromagnet;

(c) a return spring assists movement of said shaft from the picture-taking position to the focusing position in which the shutter is closed;

(d) the mirror carries a first contact which in the picture-taking position touches a second contact to activate the flashbulb;

(e) the second contact is mounted on an elastic support;

(f) the arrangement being such that the movable mirror, as soon as the first contact has touched the second contact and the flashbulb has been initiated, is immediately returned to its position of rest where the shutter is closed, this return movement being assisted by deformation of the elastic support and the return spring.

4,201,459

BRAKING DEVICE FOR FOCAL PLANE SHUTTER

Yoshiyuki Nakano, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 29, 1979, Ser. No. 25,083

Claims priority, application Japan, Mar. 30, 1978, 53/37302

Int. Cl.[2] G03B *9/40*; G02B *15/03*

U.S. Cl. 354—147 **6 Claims**

1. A focal plane shutter device for a photographic camera comprising:

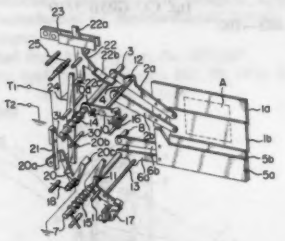
(a) an exposure aperture;

(b) a first shutter blade which is movable from a closed position to close said aperture to an open position to open said aperture;

(c) a second shutter blade which is movable from said open position to open said aperture to said closed position to close said aperture;

(d) operating means including a first driving member to drive said first shutter blade from said closed position to said open position, and a second driving member to drive said second shutter blade from said open position to said closed position subsequent to operation of said first shutter blade by said first driving member; and

(e) braking means including a reciprocating member disposed to be displaced in one direction in association with said first driving member immediately before termination of movement of said first driving member at the time of driving said first shutter blade, and to be displaced in another direction in association with said second driving member immediately before termination of movement of



said second driving member at the time of driving said second shutter blade, and a braking member provided to absorb energy of motion of said reciprocating member at the time of displacement of said reciprocating member.

4,201,460

MOTOR-DRIVEN STILL CAMERA

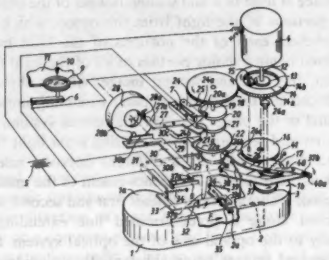
Otto Stemme, and Karl Wagner, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 902,095

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720138

Int. Cl.[2] G03B *1/18*

U.S. Cl. 354—171 **9 Claims**



1. In a motor-driven still camera having a camera release, a shutter and a mechanism for transporting film having a perforation for each film frame, a combination comprising an electric motor; an electric circuit for supplying energy to said motor; a first normally open switch interposed in said circuit and arranged to be operated and complete said circuit in response to actuation of the camera release; at least two additional normally open switches also interposed in said circuit and connected in parallel with the first-mentioned switch; and means for operating the shutter and the film transporting mechanism in response to operation of said first switch by the camera release, said means comprising at least three jointly rotatable cams and a gear train having an input member operatively connected with said motor, a first rotatable output member for driving said cams, a second rotatable output member which is drivingly coupled with said film transporting mechanism, first follower means cooperating with a first one of said cams for closing one of said additional switches in response to said rotation, second follower means cooperating with a second one of said cams for triggering the shutter in response to said rotation, and third follower means cooperating with a

third one of said cams for closing the other of said additional switches and initiating operation of the film-transporting mechanism.

4,201,461

STOP-DOWN DEVICE IN A BELLOWS DEVICE

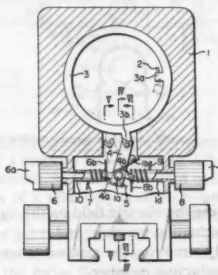
Kunihiro Fukino, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 23, 1979, Ser. No. 23,277

Claims priority, application Japan, Mar. 24, 1978, 53-37597[U]

Int. Cl.[2] G03B *9/06, 17/04*

U.S. Cl. 354—272 **3 Claims**



1. In a bellows device having a lens mount formed with a mount portion for mounting thereon a picture-taking lens and installable in normal direction in which the mount portion faces the object side during photography and in the opposite direction in which the mount portion faces the camera side, a stop-down device provided on said lens mount and operable so as to stop down a diaphragm blade by operating the aperture mechanism of said picture-taking lens, said stop-down device comprising:

a diaphragm interlocking member engageable with said aperture mechanism and displaceable between a first position to operate said aperture mechanism so as to open said diaphragm blade and a second position to operate said aperture mechanism so as to stop down said diaphragm blade; and

operating means including a first operating member having a first operating portion projecting from one side surface of said lens mount, said first operating member engaging said diaphragm interlocking member so as to displace said diaphragm interlocking member from said first position to said second position by displacement of said first operating portion in one direction, and a second operating member having a second operating portion projected from the other side surface of said lens mount, said second operating member engaging said diaphragm interlocking member so as to displace said diaphragm interlocking member from said first position to said second position discretely from said first operating member by displacement of said second operating portion in the direction opposite to the direction of displacement of said first operating portion.

4,201,462

LENS BARREL HAVING AN APERTURE INFORMATION TRANSMISSION SECTION

Naoyuki Uno, Urawa; Fumio Urano, Omiya; Eiichi Tano, Asaka, and Hiroshi Kurei, Kawagod, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,621

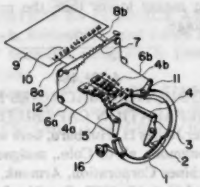
Claims priority, application Japan, Jun. 16, 1977, 52-71217

Int. Cl.[2] G03B *17/00, 9/02, 17/20*

U.S. Cl. 354—289 **7 Claims**

1. In a camera having an interchangeable lens barrel with full and minimum aperture values and means for transmitting said aperture values as aperture information to said camera body from said lens barrel, the improvement comprising:

a single transmitting member on said lens barrel for providing both full aperture and minimum aperture information; and



detecting means on said camera body for receiving said information when said lens barrel is mounted on said camera body.

4,201,463

PHOTOGRAPHIC CAMERA DEVICE

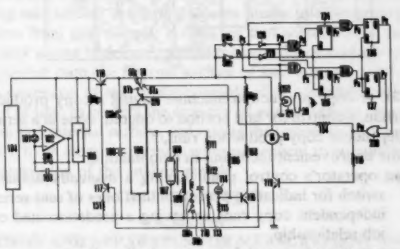
Isao Harigaya, Yokohama; Tetsuya Taguchi, Kawasaki; Fumio Ito, and Mutsunobu Yazaki, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1978, Ser. No. 905,883

Claims priority, application Japan, May 17, 1977, 52-56942; Jun. 10, 1977, 52-68634; Jun. 14, 1977, 52-70076

Int. Cl.[2] G03B *15/05, 17/52*

U.S. Cl. 354—86 **13 Claims**



1. A photographic camera device comprising:

(a) a power supply;

(b) a camera housing having a film receiving chamber;

(c) a shutter means for exposing film loaded in the chamber;

(d) a film transport means for transporting the film after exposure, said means having an electric motor to be operated with the power from the power supply;

(e) a first switching means for controlling the current supply to the motor from the power supply, said first switching means being operatively engaged with the shutter means in such a manner that the power is supplied from the power supply to the motor in response to the completion of the exposure of the film by the shutter means;

(f) a rechargeable electronic flash unit to be operated with the power of the power supply;

(g) a second switching means for controlling the current supply from the power supply to the flash unit;

(h) a detecting means for detecting the voltage of the power supply;

(i) a control means for controlling the second switching means, said control means being operatively engaged with the first switching means and the detecting means; for

(1) allowing the closing of the second switching means along with the closing of the first switching means in response to a voltage of the power supply, detected by

means of the detecting means that is higher than a predetermined reference voltage; and for

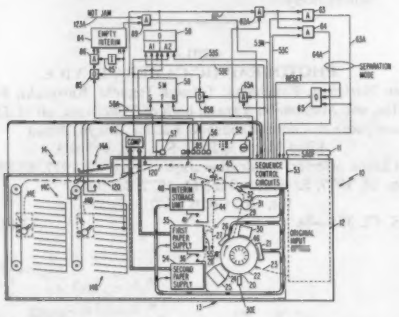
(2) controlling the second switching means so as to prohibit the closing of the second switching means while the first switching means is being closed, in response to a voltage of the power supply, detected by means of the detecting means lower than the predetermined reference voltage.

4,201,464

COPY PRODUCTION MACHINES HAVING JOB SEPARATION CAPABILITIES

Anthony J. Botte; James H. Hubbard, both of Boulder, and Paul R. Spivey, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1977, Ser. No. 841,623
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—14 R **66 Claims**



31. A copy production machine having a copy production portion, a control for said portion to operate same in a series of independent copy production runs,

the improvement including in combination,

an operator's control panel having a manually actuatable switch for indicating predetermined ones of said series of independent copy runs as having a predetermined copy job relationship,

means in said control for automatically adjusting its operation to reflect said predetermined copy job relationship, and

separation means in said control for actuating said copy production portion to transport at least one separator sheet for identifying said predetermined job relationship in said produced copies each time said switch is actuated.

4,201,465

DRUM CLEANING PROCESS AND APPARATUS FOR ELECTROPHOTOGRAPHY

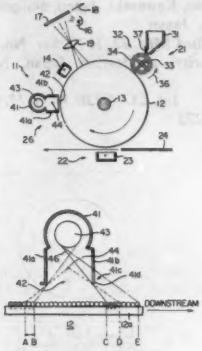
Hazime Oyama; Kohji Suzuki; Manabu Mochizuki, and Teruyuki Ohnuma, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 723,275, Sep. 15, 1976, abandoned. This application Jun. 27, 1978, Ser. No. 919,640
Claims priority, application Japan, Nov. 26, 1975, 50/141410
Int. Cl.[2] G03G *21/00*
U.S. Cl. 355—15 **21 Claims**

1. In an electrophotographic process in which a photoconductive member is electrostatically charged, radiated with a light image to produce an electrostatic image, developed by application of a toner substance thereto to form a toner image and subjected to a transfer operation in which the toner image is transferred to a copy sheet, an improvement for removing residual toner substance from the photoconductive member after the transfer operation comprising the steps of:

(a) radiating light uniformly onto the photoconductive member to cause photoconduction;

(b) applying an electric field to the photoconductive member to substantially neutralize the electrostatic charge simultaneously with performing step (a);



(c) superimposing the electric field on the light in an area on the photoconductive member; and

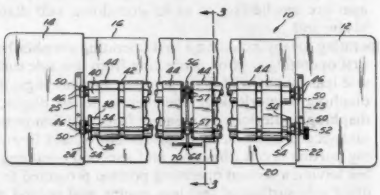
(d) subsequently removing the residual toner substance from the photoconductive member.

4,201,466

PHOTOPRINTER WITH SELF-LOCATING ROLL SPREADER

Terry G. Seelenbinder, Elk Grove Village, Ill., assignor to AM International, Inc., Los Angeles, Calif.

Filed Feb. 5, 1979, Ser. No. 9,417
Int. Cl.[2] G03B *27/22*
U.S. Cl. 355—104 **7 Claims**



1. In a photocopy machine having an elongate illumination cylinder nested among a plurality of elongate belt rolls, means supporting the ends of the belt rolls and endless elastic belts trained about the belt rolls and the illumination cylinder, the improvement which comprises:

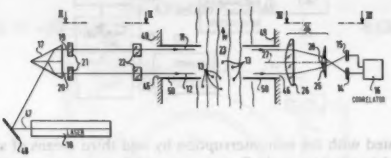
The belt rolls being so constructed as to exhibit insufficient stiffness against transverse deflection for proper operation under the transverse loading of the elastic belts over the span between the end support means; and

a spreader plate means between said end support means engaging said rolls at a position between said end support means, said spreader plate means including means defining roll positions equivalent to the relative roll positions at each end support location, and being configured to provide an access throat between two of the rolls such that sheets being fed for processing can move into contact with the illumination cylinder.

4,201,467
GAS VELOCITY METER

Klaus Hartmann, Münich, and Wolfgang Siersch, Taufkirchen, both of Fed. Rep. of Germany, assignors to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Aug. 31, 1977, Ser. No. 829,469
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1976, 2643616
Int. Cl.[2] G01P *3/36*; G01F *1/00*
U.S. Cl. 356—28 20 Claims

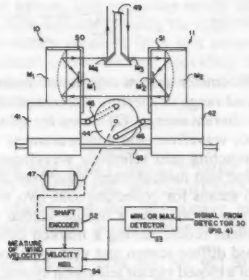


1. A flow velocity meter, suitable for measuring the mean flow velocity of a medium flowing along a duct and comprising means for generating first and second beams of light each having the form of a relatively shallow relatively wide band with a relatively regularly disbributed light flux and for directing said beams of light along respective first and second spaced apart planes lying tranversely of the duct and substantially at right angles to the mean flow direction, means for ensuring that each of said beams intercepts a cross section of the medium flowing through the duct representative of the mean flow velocity of same through the duct, first and second photodetectors disposed to receive said beams respectively, after said beams have traversed their respective transverse planes, and correlator means arranged to receive output signals from said first and second photodetectors representative of the instantaneous flows through said transverse planes for determining the transit time of said medium therebetween.

4,201,468
METHOD AND APPARATUS FOR DOPPLER FREQUENCY MODULATION OF RADIATION

Jack S. Margolis, Pasadena; Daniel J. McCleese, Los Angeles; Michael S. Shumate, Pasadena, and Clay H. Seaman, Glendale, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Nov. 3, 1978, Ser. No. 957,452
Int. Cl.[2] G01P *3/36*
U.S. Cl. 356—28.5 12 Claims

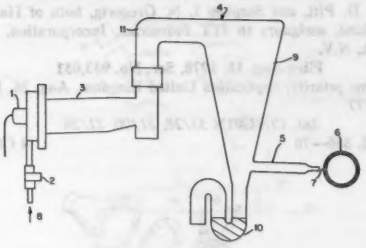


1. A method for Doppler frequency modulating radiation using two opposing retroreflectors and reciprocally moving both retroreflectors towards each other and away from each other, said retroreflectors having their optical axis parallel to each other, using a first reflector to direct radiation from outside a space between said retroreflectors into one of said retroreflectors, and using a second reflector to direct radiation from one of said retroreflectors to outside said space between said retroreflectors.

4,201,469
AEROSOL DEPOSITION IN FURNACE ATOMIZATION

Jaroslav P. Matousek, Forrestville, and Lloyd E. Smythe, Belbue Hill, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Aug. 2, 1977, Ser. No. 821,148
Claims priority, application Australia, Aug. 2, 1976, 6842/76
Int. Cl.[2] G01N *1/00*; G01J *3/30*
U.S. Cl. 356—36 12 Claims

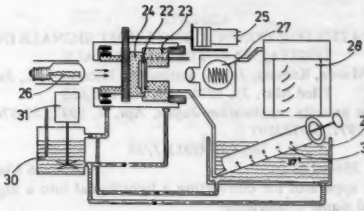


1. A method of atomizing an analyte sample including the steps of: heating a graphite tube furnace to an analyte drying temperature; converting said analyte sample to aerosol form; passing said aerosol through separator means to remove large droplets from said sample; conveying said aerosol from said separator means to delivery means through which said aerosol is deposited onto the internal surface of said furnace; ceasing said conversion of said analyte sample after a predetermined period of time to control the quantity of analyte sample deposited on said internal surface; and raising the temperature of said furnace to an atomizing temperature subsequent to completing said deposition of the analyte sample.

4,201,470
METHOD AND APPARATUS FOR MEASUREMENT AND REGISTRATION OF THE AGGREGATION RATE OF PARTICLES SUSPENDED IN A LIQUID

Albrecht Ehrly, Am Kellersbusch 10, 6072 Dreieich, and Hans J. Schmitt, Rimbacherstrasse 27, 6149 Grasellenbach, both of Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,630
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1977, 2707962; Jan. 18, 1978, 2802033
Int. Cl.[2] G01N *33/16*
U.S. Cl. 356—39 32 Claims



1. A method for measuring the rate of aggregation of particles suspended in a liquid and in particular for measuring the rate of aggregation of red blood corpuscles in the blood, comprising the steps of:

introducing a blood sample into the interior of a disc-shaped cuvette having opposed side walls, the latter being disposed in the path of a light beam of a light source;

subjecting the blood sample contained within said cuvette to a shear movement around an axis of shear movement to prevent substantial sedimentation of the formed aggregates, said shear movement axis being substantially parallel and substantially coincident to said light beam path; and

measuring the change in intensity of the light beam which impinges on the blood sample within said cuvette.

4,201,471

OIL CONCENTRATION DETECTOR

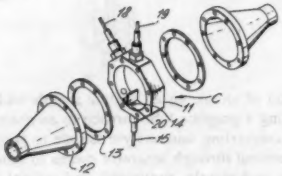
Gillies D. Pitt, and Stephen I. N. Gregorig, both of Harlow, England, assignors to ITT Industries, Incorporation, New York, N.Y.

Filed Aug. 11, 1978, Ser. No. 933,051

Claims priority, application United Kingdom, Aug. 26, 1977, 36060/77

Int. Cl.[2] G01N *33/28, 21/00, 21/26*

U.S. Cl. 356—70 **4 Claims**



1. A system for detecting oil in water, said system comprising: a scatter cell to receive a fluid mixture; source means to direct a beam of light through said scatter cell; a first photocell in alignment with said beam on the side of said scatter cell opposite the side on which said source means is located; a second photocell spaced from said first photocell to receive scattered light in a direction different from that in which said first photocell receives light; first means for producing a first electrical signal of a magnitude which is a logarithmic function of the output of said first photocell; second means for producing a second electrical output signal of a magnitude directly proportional to the output of said second photocell; and electrical switch means for producing an output proportional to the concentration of oil at a predetermined terminal by switching only said second electrical signal to said terminal until one of said first and second electrical signals passes through a predetermined threshold level, and then switching only said first electrical signal to said terminal so long as said one electrical signal does not pass through said level in the reverse direction.

4,201,472

APPARATUS FOR CONVERTING LIGHT SIGNALS INTO DIGITAL ELECTRICAL SIGNALS

Yoshio Maeda, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 21, 1978, Ser. No. 888,655

Claims priority, application Japan, Apr. 4, 1977, 52-37627; Nov. 9, 1977, 52-133507

Int. Cl.[2] G01J *1/46*

U.S. Cl. 356—226 **6 Claims**

1. An apparatus for converting a light signal into a digital electrical signal comprising:

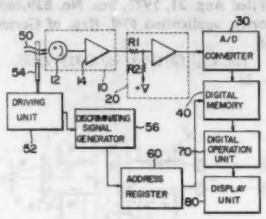
(a) first means for converting object light to be measured into an electrical signal,

(b) second means for converting an electrical output signal of said first means into a digital signal,

(c) third means for selectively interrupting the incident light entering said first means,

(d) fourth means for increasing the electrical input signal to said second means by a predetermined amount,

(e) fifth means for storing a first digital signal associated with the interruption by said third means of said object light on said first means and a second digital signal associated with the non-interruption by said third means of said object light on said first means, said first and second digital signals being produced from said second means, and



(f) sixth means for calculating the difference between said first and second digital signals stored in said fifth means.

4,201,473

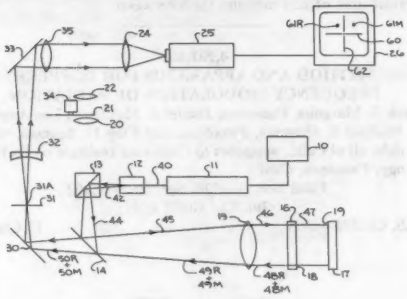
OPTICAL INTERFEROMETER SYSTEM WITH CCTV CAMERA FOR MEASURING A WIDE RANGE OF APERTURE SIZES

Peter L. Domenicali, Madison, and George C. Hunter, Middletown, both of Conn., assignors to Zygo Corporation, Middlefield, Conn.

Filed Apr. 21, 1978, Ser. No. 898,945

Int. Cl.[2] G01B *9/02*

U.S. Cl. 356—360 **6 Claims**



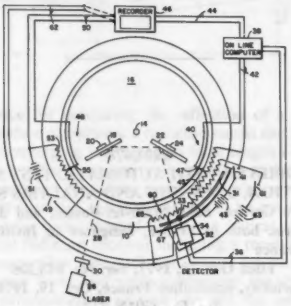
1. An interferometer system capable of measuring test articles over a broad range of aperture size comprising (1) a source of a beam of coherent energy, (2) means for splitting said beam into a reference wavefront and a measurement wavefront, (3) means for interacting said reference wavefront with a reference surface and said measurement wavefront with the article under test, (4) means for collecting said two wavefronts and focusing them as spots onto a diffuse screen containing an integral alignment reticle having a marked center, (5) means for viewing said diffuse screen and said spots focused thereon on a monitor of a closed circuit television system, (6) means for moving said spots relative to each other so they coincide on said monitor at said marked center, thereby properly aligning said reference and measurement wavefronts to form an interference pattern, (7) means for removing the image of said screen from said monitor, (8) means for imaging the limiting aperture in the measurement region onto (9) means which destroys the coherence length of the beam comprised of the recombined aligned reference and test wavefronts without

producing any spurious patterns on said monitor, (10) means for providing variable magnification of the image on means (9), and (11) means for focusing said image of means (9) onto the vidicon of said closed circuit television system.

4,201,474
VARIABLE ANGLE OF INCIDENCE REFLECTOMETER WITH A CONTINUOUS READ OUT

Herbert B. Holl, and Thomas G. Roberts, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 7, 1978, Ser. No. 931,235
Int. Cl.[2] G01N *21/48*
U.S. Cl. 356—369 **6 Claims**



1. A reflectometer comprising a base, a platform rotatably mounted relative to said base, a motor mounted relative to said base and said platform for rotating said platform relative to said base, a sample and a mirror mounted on said platform at a dihedral angle relative to the axis of rotation of said platform, means for illuminating said sample, a light detector mounted on said base relative to said mirror for receiving reflected light therefrom, a first means mounted relative to said base and said platform and having output leads connected for indicating the angle of incidence of the light beam from said light means on said sample, said output leads of said first means being connected to a first axis of a recorder, a second means mounted relative to said base and said platform and having output leads connected for indicating the angle of incidence of the light beam from the mirror, said output leads of said second means being connected to a computer means, said light detector having output leads connected to said computer means, said computer means being preprogrammed to correct for imperfections of said mirror, said computer means correcting the signal from the light detector utilizing the angle of incidence of the mirror information received from said second means and the preprogrammed correction and providing the corrected signal to the other axis of the recorder for driving the other axis of the recorder.

4,201,475
DEVICE/PROCESS FOR CONTACT FREE DISTANCE AND THICKNESS MEASUREMENT

Viktor Bodlaj, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 28, 1978, Ser. No. 901,202
Claims priority, application Fed. Rep. of Germany, May 18, 1977, 2722577
Int. Cl.[2] G01C *3/08*; G01S *9/62*
U.S. Cl. 356—381 **9 Claims**

1. A system for measuring the distance of a point on a surface of an object from a zero plane, comprising:

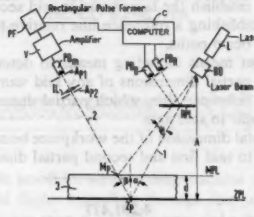
a sharply focused light beam;

beam deflector means for periodically deflecting the light beam in one direction and then a reverse direction over a measuring area in which the object is arranged, a point on the object being located on a predetermined line of sight during both directions of scan;

a measuring photo-detector means for receiving light only along said predetermined line of sight and for providing a measuring pulse at a measuring time when the point on the object surface is hit by the light beam;

means providing a reference pulse at a reference time when said beam deflector means deflects the light beam towards a zero plane point located on said predetermined line of sight;

pulse former means for converting measuring pulses of the measuring photo-detector means into rectangular pulses;



said measuring photo-detector means producing a first measuring pulse and said pulse former means producing a corresponding first rectangular pulse during deflection movement of the light beam by said deflector means in the one direction;

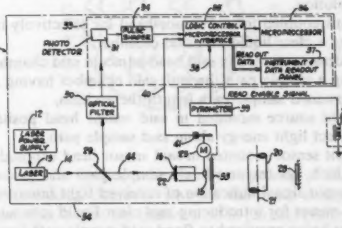
said measuring photo-detector means producing a second measuring pulse and said pulse former means producing a corresponding second rectangular pulse during deflection movement of the light beam by said deflector means in the reverse direction; and

means for determining a time difference representative of the distance from a comparison of corresponding same side edges of the first and second rectangular pulses with reference times produced during deflection of the light beam in the one and in the reverse directions.

4,201,476
LASER DIMENSION GAUGE

Dominick J. Musto, Middlesex, and Harold Lerner, Ft. Lee, both of N.J., assignors to The Austin Company, Cleveland, Ohio

Filed Jan. 5, 1978, Ser. No. 867,290
Int. Cl.[2] G01B *11/04*
U.S. Cl. 356—386 **12 Claims**



1. A laser gauge for non-contact measuring of a dimension of a workpiece comprising, in combination,

a laser mounted to project a laser beam,

a parabolic mirror having a focal point along the axis of the mirror,

scannable means substantially at said focal point mounted to

scan said laser beam along said parabolic mirror and establishing first and second laser beam paths extending from said parabolic mirror parallel to said axis and immediately adjacent first and second opposite sides of the workpiece, respectively,

photodetector means mounted to receive the laser light beam from both said first and second laser beam paths,

output means connected to receive the output of said photodetector means,

means actuated in accordance with said scannable means to determine the position thereof and having an output to said output means, whereby a first signal is received at said output means when said scannable means is positioned at a first position to establish the laser beam in said first beam path, and a second signal is received at said output means when said scannable means is positioned at a second position to establish the laser beam in said second path,

means establishing a reference line relative to said first and second beam paths,

said output means including means to determine first and second partial dimensions of any said workpiece relative to said reference line, which partial dimensions are perpendicular to said axis,

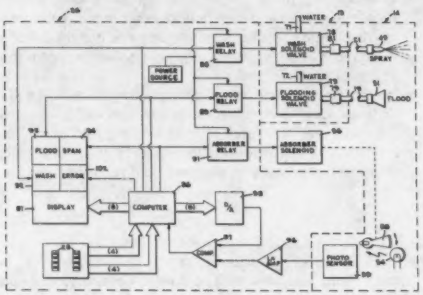
and the total dimension of the workpiece being algebraically related to said first and second partial dimensions.

4,201,477

SUSPENDED SOLIDS METER

Warren G. Palmer, Saratoga, and John N. Pritchard, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 16, 1978, Ser. No. 869,882
Int. Cl.[2] Q01N *21/24*
U.S. Cl. 356—434 **19 Claims**



1. Apparatus for detecting the concentration of solids suspended in a solution, comprising

a sensor head adapted to be immersed in the solution and having a chamber disposed for communication with the solution,

means coupled to said sensor head for selectively introducing a clear liquid into said chamber,

windows mounted in said head adjacent said chamber defining a sample path through said chamber having a predetermined sample path length therewithin,

a light source mounted in said sensor head positioned to direct light energy along said sample path,

a light sensor mounted in said sensor head exposed to light which has traversed said sample path and providing an output signal indicative of received light intensity,

said means for introducing said clear liquid into said chamber being arranged to flood said sample path length with said clear liquid, whereby a low concentration of suspended solids is simulated,

a light absorbing member disposed for motion between a position intercepting said sample path and a position remote therefrom, said light absorbing member being formed of a material arranged to absorb a predetermined portion of the light energy directed along said sample path and arranged to transmit a predetermined portion of the light energy directed along said sample path corresponding to a measurable level of suspended solids concentration when said light absorbing member is disposed in said intercepting position, whereby a high concentration of suspended solids is simulated,

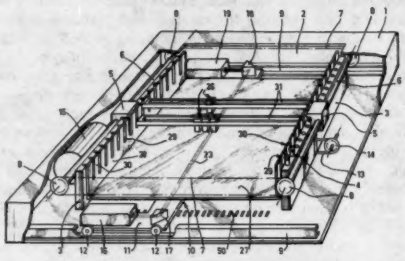
and means coupled to receive said output signal for controlling said means for introducing a clear liquid, and said light absorbing member to alternately flood and intercept said sample path, so that the output of said light sensor is calibrated by said means for controlling to provide correction for subsequent suspended solids concentration readings.

4,201,478

PHOTOMETER WITH AUTOMATIC TEST SAMPLE SELECTION, SCANNING AND ANALYSIS SYSTEM

Jean-Pierre Gerlier, Saint-Maur-les-Fosses, and Jacques Augier, Paris, both of France, assignors to Institut Pasteur, Paris, France

Filed Oct. 18, 1977, Ser. No. 843,209
Claims priority, application France, Oct. 19, 1976, 76 31423
Int. Cl.[2] G01N *21/22*
U.S. Cl. 356—440 **34 Claims**



1. Photometer for the automatic analysis of samples comprising

(A) an optical bench emitting a measuring lightbeam,

(B) a series of transparent cells containing the samples for analysis and for successive presentation in the beam,

(C) result recording and processing means,

(D) a set of rectilinear presentation means each supporting a juxtaposed row of said cells,

(E) a magazine receiving said presentation means arranged in parallel side by side,

(F) means for selecting and extracting each of said presentation means successively from the set of the latter,

(G) a movable carriage supporting said optical bench, and

(H) means for moving said carriage at reading speed parallel to the row of cells selected such that the measuring beam of said bench successively traverses each cell of said selected row;

said magazine comprising a plate in the form of a tray and a cover undissociable from said tray during the measuring operations, said tray being provided laterally with two channelled opposite walls of which the channels define vertical guide tongues along which said presentation means can slide.

4,201,479

DEVICE FOR MEASURING THE REFLECTION OF A PLANE, SPECULARLY REFLECTING SURFACE

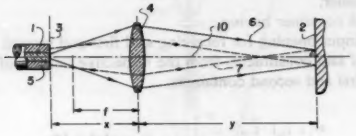
Marcel A. Lardon, Maienfeld, Switzerland, assignor to Balzers Aktiengesellschaft für Hochvakuumtechnik und Dünne Schichten, Liechtenstein, Liechtenstein

Filed May 26, 1978, Ser. No. 909,808

Claims priority, application Switzerland, Jun. 6, 1977, 6933/77

Int. Cl.[2] G01N *21/48*

U.S. Cl. 356—445 11 Claims



1. A device for measuring the reflection of a specularly reflecting surface comprising a radiation means and a radiation receiver, a converging lens having a focal length f interposed between said radiation means and a surface to be measured whereby a radiation beam from said radiation means is directed through said lens and onto the surface to be measured, said radiation means being located along the optical axis of said lens, and said radiation receiver including a receiving surface which circumscribes said radiation means for receiving the reflected beam from said surface whereby the distance between the principle plane of said lens and the surface to be measured is equal to:

$$(2X-f/X-f)\cdot(f/2)$$

where X is the distance between the principle plane of said lens and radiation means.

4,201,480

EXTRUSION APPARATUS FOR MANUFACTURING FOAMED THERMOPLASTIC MATERIAL

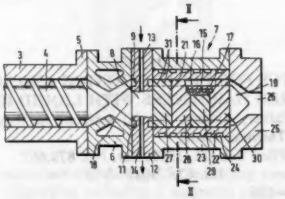
Wilhelm Brand, Hannover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover Kleefeld, Fed. Rep. of Germany

Filed Aug. 30, 1978, Ser. No. 937,923

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1977, 2739998

Int. Cl.[2] B01F *3/04, 5/06, 15/00, 15/06*

U.S. Cl. 366—79 7 Claims



1. Extrusion apparatus for manufacturing foamed thermoplastics material, in particular for blow moulding sheets of expanded polystyrene, comprising an extruder for melting the plastics material and a static cooling and mixing member disposed downstream of the extruder, said static cooling and mixing member including means defining an outer cooling surface and means defining an inner cooling surface, said means defining said inner and outer cooling surfaces defining between them an annular passage through which the expansible plastics material flows in an axial direction, and at least one metal strip member positioned in said annular passage, said metal strip member being star-shaped in cross section having outer points which engage said means defining said outer cooling surface and inner points which engage said means defining said inner cooling surface, thereby defining inner and outer material passages, the edges of said metal strip member extending at an oblique angle relative to the longitudinal axis of said static cooling and mixing member, whereby said material is divided and evenly cooled.

4,201,481

SCROLLS FOR EXTRUDING MACHINES

Michael I. Iddon, Leyland, and Donald M. Turner, Bath, both of England, assignors to Iddon Brothers Limited, Lancaster, England

Filed Oct. 11, 1978, Ser. No. 950,443

Int. Cl.[2] B29B *1/06*

U.S. Cl. 366—79 5 Claims

5. A rotatable scroll for an extruding machine comprising a series of helical flights extending through four zones, a feed zone, a compaction zone, a blending zone and a delivery zone, channels between the flights, a series of angled vanes of less height than the flights in the base of the channels to provide a plurality of routes for the material through the channels and to ensure that any material occupying the centre of a channel is re-directed into a surface layer to provide a highly homogeneous material when reaching the delivery zone and ramps over which the material in the surface layer is forced to flow as it passes from zone to zone.

4,201,482

PERFORATED MIXING ELEMENTS FOR STATIC AND DYNAMIC MIXERS

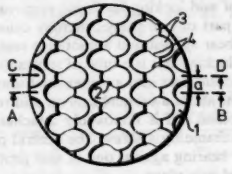
Günter Imhäuser, Cologne; Dieter Brauner, Solingen, and Edgar Muschelknautz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,816

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822096

Int. Cl.[2] B01F *5/00, 7/00*

U.S. Cl. 366—98 16 Claims



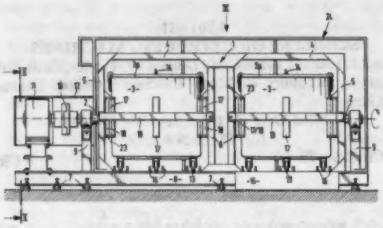
1. An insert for a mixer, the insert comprising at least one pair of intersecting channels, wherein the insert comprises a solid material in which the channels lie in parallel planes, each channel inclined at an angle α of from 20° to 70° to the longitudinal axis of the insert projected in the parallel planes, the angle α being alternately positive and negative in successive planes so that the channels of adjacent planes intersect to form a grid and the channels being such that channels on adjacent planes overlap by up to 40% of their cross-section at their point of intersection.

4,201,483

APPARATUS FOR TUMBLING FOODSTUFFS UNDER VACUUM

Jürgen Franzke, Bad Essen, Fed. Rep. of Germany, assignor to Röscherwerke GmbH, Osnabruck, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,646
Int. Cl.[2] B01F *9/02*
U.S. Cl. 366—139 **10 Claims**



1. A tumbling machine for agitating and massaging foodstuffs under vacuum, comprising:

a base;

upstanding bearing posts mounted on said base and equipped with journals;

a rotatable frame, provided with extending coaxial shafts residing in said journals to permit rotation of said frame around a normally horizontal axis, said frame defining at least one space in which may be placed at least one container for said foodstuffs;

means, coupled to said rotatable frame, for imparting rotary motion to said frame around said axis;

at least one container for said foodstuffs, said container having guide means for insuring the location and position thereof in said rotatable frame, said guide means being defined by a plurality of uniformly spaced protruding guides fixedly mounted on the outside wall of said container, said container being provided with means for evacuating air therefrom;

said rotatable frame is provided with stop means so located that, when said container is placed in the space defined in said rotatable frame, at least some of said protruding guides come into contact with said stop means to thereby prevent further motion of said container with respect to said frame in the direction of entry;

a locking bar member for locking said container in said frame to prevent motion thereof with respect to said frame at least in the direction opposite to entry, said locking bar being held pivotably at one end thereof on said frame, the other end of said locking bar being removably attachable to another part of said frame, thereby causing its central portion to bear against and immobilize said container;

wherein said locking bar is a tube of substantially rectangular cross section bent into a trapezoidal shape, one end of which pivots about a vertical axis on said rotatable frame while the other end is removably attachable to another part of said frame by a screw, the central portion of said locking bar bearing against one of said protruding guides when locked into place.

4,201,484

CONTINUOUS MIXING APPARATUS

Ronald J. Sasiela, Whitestone, N.Y., and Daniel T. Layne, Brea, Calif., assignors to Modern Maid Food Products, Inc., Garden City, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,493
Int. Cl.[2] B01F *7/08, 15/02, 5/12*
U.S. Cl. 366—153 **15 Claims**

1. Apparatus for continuously preparing a mixture of two or more constituents; said apparatus comprising:

a first container having

an input for the reception of a first one of said constituents,

an output, and

advancing means for advancing said first one of said constituents through said output;

a second container having

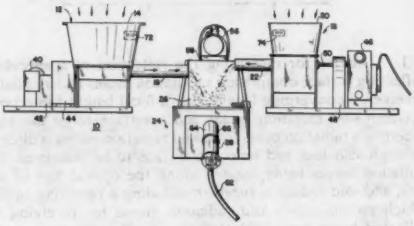
an input for the reception of a second one of said constituents,

an output, and

advancing means for advancing said second one of said constituents through the output of said second container;

a third container having

an input opening for receiving said first and second ones of said constituents from the respective outputs of said first and second containers,



an output, and

mixing means for blending said first and second ones of said constituents into a substantially air-free blended mixture and for advancing said blended mixture through the output and said third container;

further including first driving means for driving said advancing means of said first container; second driving means for driving said advancing means of said second container; and third driving means for driving said mixing means of said third container;

wherein said first, second and third driving means are each variable speed devices;

wherein said mixing means in said third container comprises first and second augers hellically oriented in the same direction.

4,201,485

APPARATUS FOR PROPORTIONING AND MIXING POWDERED HARDENERS WITH LIQUID RESINS

Ronald E. Walker, Auburn, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

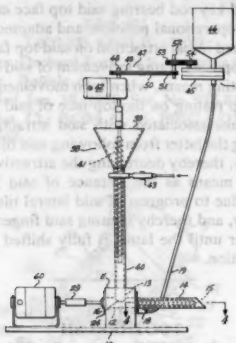
Filed Feb. 21, 1978, Ser. No. 879,667
Int. Cl.[2] B01F *7/02*
U.S. Cl. 366—156 **6 Claims**

1. In an apparatus for continuously mixing liquid and powder materials to a uniform composition, of the type wherein a mixing tube receives said materials through separate, axially spaced inlets and a mixing screw, extending longitudinally in said tube, upon rotation, transports said materials through the tube and causes them to be intimately mixed together, the improved mixing screw, comprising:

threads, having in cross section, a rectangular leading edge and a sloping trailing edge, said screw divided into

materials transporting elements, installed in the mixing tube with the leading edge of the thread facing the direction of material flow through said tube, and

shear mixing elements, said threads modified by spiral cuts into the threads with a greater lead than the lead of said



threads and installed with the thread sloping edge facing in the direction of material flow.

4,201,486

PROCESS FOR THE MANUFACTURE OF MAGNETIC RECORDING MEDIA

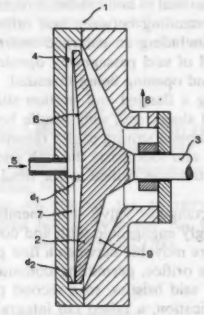
Werner Huebner, Frankenthal; Job-Werner Hartmann, Ludwigshafen; Friedrich Domas, Altlussheim; Peter Nagel, Willstaett; Paul Deigner, Weisenheim; Eberhard Koester, and Hans Hauser, both of Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 905,040

Claims priority, application Fed. Rep. of Germany, May 16, 1977, 2722078

Int. Cl.[2] B01F *15/02, 7/10*

U.S. Cl. 366—196 **8 Claims**



1. In the manufacture of magnetic recording media in which a magnetic dispersion including a magnetic pigment dispersed in a binder containing a solvent is applied to a non-magnetic base, followed by magnetic orientation of the applied coating, a process for subjecting the magnetic dispersion, prior to its application to said base, to shear, said process comprising:

providing, between the smooth face of a rotatable disc and an adjacent smooth surface confronting said face, a gap extending substantially in a plane normal to the axis of the disc and tapering steadily toward the periphery of the disc,

forcing the magnetic dispersion to flow, from a centrally disposed inlet of said gap, radially outwardly through said gap to said periphery and thence to an outlet port, and

rotating said disc relatively to said adjacent surface to set up a shear gradient in the magnetic dispersion flowing through said gap.

4,201,487

DEVICE FOR MAKING SAUCES

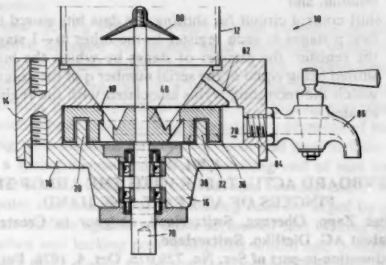
Franz J. Backhaus, Altstrasse 8, 6450 am Main, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 3,050

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801549

Int. Cl.[2] B01F *5/06, 7/16*

U.S. Cl. 366—304 **20 Claims**



1. Apparatus for making and mixing sauces comprising a housing, an open-bottom mixing vessel having its open bottom seated on said housing, a stator assembly fixedly mounted in the lower part of said housing, a rotor assembly adapted for rotation within said housing and located centrally therein, and a funnel-shaped opening in the upper part of said housing and in axial alignment with said rotor assembly, said rotor assembly comprising a plurality of circumferentially spaced projections extending downwardly toward the lower part of said housing, the central portion of the rotor assembly being formed as an upstanding truncated cone extending into the funnel-shaped opening, said rotor projections extending from an annular disk member, and a conical wall connecting the base of the truncated cone to said disk.

4,201,488

RECORDING/CONTROL ARRANGEMENT FOR A DOT RECORDING MACHINE

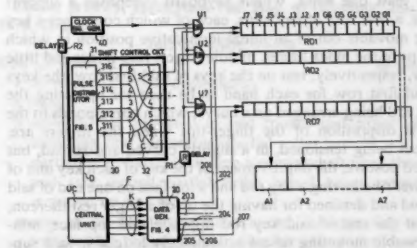
Cyrille Gosset, Danjoutin, and Jean-Marc Thomas, Valdoie, both of France, assignors to Compagnie Internationale pour l'Informatique, Paris, France

Filed Jun. 12, 1978, Ser. No. 914,988

Claims priority, application France, Jun. 21, 1977, 77 19000

Int. Cl.[2] B41J *3/10*

U.S. Cl. 400—121 **8 Claims**



1. A recording control apparatus for a dot recording machine including a recording medium and at least one character recording head having n electric pulse responsive recording

styli arranged in a matrix of n rows and m columns, at least one stylus being provided in each row, the medium and the head being relatively displaceable in the direction of the rows, the columns being numbered serially as 0, 1, 2, . . . , q, . . . , (m−1) in the direction in which the head moves relative to the recording medium, the control apparatus comprising:

at least one bank of n shift registers, each of the registers being associated with one of the recording styli, each register having p+m−1 stages, each of the stages storing a data bit required to cause one dot to be recorded, where p is a whole number at least equal to m,

a data bit generator for supplying data bits for the character to be recorded to the first p stages of said registers in the same way as if the recording styli were aligned in a single column, and

a shift control circuit for shifting the data bits stored in the first p stages in each register to the other m−1 stages in the register, the number of stages by which the bits are shifted being equal to the serial number q of the column in which the recording stylus associated with the register is located.

4,201,489

KEYBOARD ACTUATABLE WITH THE AID OF THE FINGERS OF AT LEAST ONE HAND

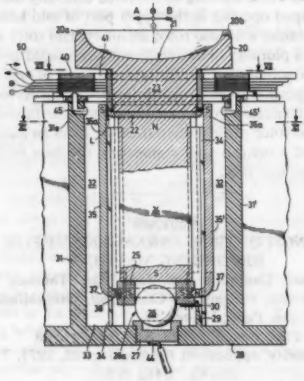
Walter Zapp, Oberegg, Switzerland, assignor to Createchnil Patent AG, Dietliko, Switzerland

Continuation-in-part of Ser. No. 729,075, Oct. 4, 1976, Pat. No. 4,081,068. This application Jan. 12, 1978, Ser. No. 868,930

Claims priority, application Switzerland, Aug. 4, 1976, 10048/76

Int. Cl.² B41J *5/28*

U.S. Cl. 400—485 **19 Claims**



1. In a keyboard, actuatable with the aid of the tips of fingers of at least one hand, which keyboard comprises a support frame, a first row of key units, each of which comprises a key being movable out of an initial inoperative position in which the tips of the index finger, middle finger, ring finger and little finger, respectively, rest on the keys of said first row, the keys of said first row for each hand to be used for operating the keyboard being arranged on a curve, which corresponds to the natural disposition of the finger-tips when the fingers are, without being tensioned, in a slightly curved and spread, but relaxed posture, the improvement of the key of each key unit of said first row having a key rod and a top face on one end of said key rod and destined for having the tip of a finger rest thereon, and, at the end of said key rod opposite said top face, non-depressable mounting means articulatedly lodged in said support frame and being adapted for preventing downward depression of said key while permitting lateral shifting of said key toward at least one determined operational position, thereby permitting random vertical pressure to be exercised by a finger tip on said top face of a key of said first row without causing operational displacement of the latter key, each key unit of said guide key row further comprising:

(a) attracting means adjacent one side of said key, near the end of said key rod bearing said top face and facing away from said operational position, and adapted for exercising a determined initial attraction on said top face-bearing key rod end opposing tilting movement of said key away from said attracting means, when such movement is initiated by a finger tip resting on the top face of said key; and

(b) stop means associated with said attracting means and preventing the latter from following said tilting movement of said key, thereby decreasing the attractive force of said attracting means as the distance of said key therefrom increases due to progress of said lateral tilting movement of said key, and thereby causing said finger tip to tilt said key further until the latter is fully shifted to said operational position.

4,201,490

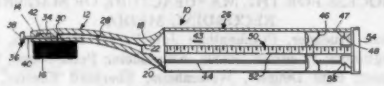
TOOTHBRUSH

Augustino D'Angelo, 24150 Deanhurst, St. Clair Shores, Mich. 48082

Filed Sep. 7, 1978, Ser. No. 940,165

Int. Cl.² A46B *11/02*

U.S. Cl. 401—175 **3 Claims**



1. A toothbrush having a toothpaste storage capacity, said toothbrush comprising:

a one piece shank having a head portion;

a plurality of bristles attached to the head portion, said shank and said head portion having a passageway extending therethrough, said passageway having a discharge orifice at one end proximal to said bristles, a rectangularly shaped guide bore extending between said orifice and an outer end thereof including an enlarged intermediate portion, the other end of said passageway opening at the end of said shank, said opening being threaded;

a handle having a flanged end portion slidingly engaging said threaded shank end, said handle being hollow and having a toothpaste storing cavity therein and adapted to communicate said toothpaste through said shank passageway to the discharge orifice at the head portion of said shank;

a one piece rectangular valve stem member in said head portion slidingly engageable with and complementary to said guide bore movable between a first position opening said discharge orifice, permitting communication of said toothpaste to said bristles, to a second position, closing said communication, a raised tab integral with the stem movable within the enlarged section, an enlarged member handle, the member handle abutting the head portion to define the second position and the tab abutting a wall of the enlarged portion to define the first position;

a threaded shaft, one end of said threaded shaft being mounted to an end of said handle so as to rotate said shaft about the longitudinal axis of said handle;

said knob including a pair of opposed snap members to lockingly engage an inside surface of said handle retaining said knob longitudinally;

a piston means having a central aperture engaging said threaded shaft; and

means on the interior of said handle for engaging said piston to prevent rotation of said piston relative to said housing, whereby rotation of said shaft causes axial movement of said piston within said toothpaste holding cavity so as to

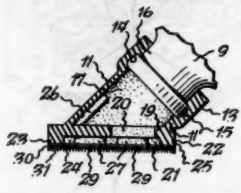
force said toothpaste therein to said passageway and through said discharge orifice.

4,201,491

LIQUID APPLICATOR

Henry A. Kohler, Orchard Park, N.Y., assignor to Truly Magic Products, Inc., Buffalo, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,812
Int. Cl.[2] B43M *11/06*; B05C *1/00*
U.S. Cl. 401—264 **5 Claims**



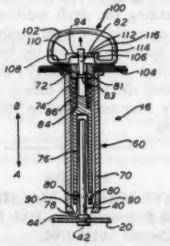
1. An applicator for liquid from a container comprising a flexible resilient tubular inlet portion including an annular wall, an end on said tubular inlet portion, means on said end for mounting relative to said container for causing said inlet portion to receive liquid from said container, a control membrane spaced from said end and extending across said tubular inlet portion to define a chamber therewith, a normally closed slit in said control membrane deformable to a more open position upon flexing of said control membrane, means on the opposite side of said control membrane from said inlet portion for depositing liquid on a surface, and rib means integral with said annular wall and projecting from the internal surface thereof and extending along said annular wall for bearing against said control membrane upon distortion of said inlet portion to thereby deform said control membrane to open said slit, said rib means being so oriented relative to said control membrane when in engagement therewith to effect said deformation of said control membrane to open said slit without effectively blocking said slit.

4,201,492

LOOSE LEAF BINDER LOCK AND OPERATING MEMBER THEREFORE

Robert Almgren, Chatham, N.J., assignor to American Loose Leaf Corp., Clifton, N.J.

Continuation of Ser. No. 758,068, Jan. 10, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,366
Int. Cl.[2] B42F *3/00*
U.S. Cl. 402—54 **9 Claims**



1. A locking mechanism for a binder having a pair of cover members formed with cover panels hinged to side flanges, and which coact one with the other to provide between inner surfaces thereof a binder, said cover members being selectively separable one from the other to facilitate disposition of leaves within the binder; comprising:

(a) a locking post carried by and extending from the inner surface of one of said cover members;

(b) a locking sleeve assembly carried by the other cover member disposed thereon to extend from the inner surface thereof towards and for coaction with said locking post;

(c) said locking sleeve assembly including a hollow outer sleeve connected at one of tis ends to a rib carried by the inner surface of said other cover member and with its other, or locking end, disposed for disposition about said locking pose, and formed with an inwardly tapered cam surface;

(d) said locking sleeve assembly further including an inner sleeve disposed for limited axial movement within said hollow of said outer sleeve, and being formed with a hollow locking end of a configuration to receive said locking post, disposed proximate said locking end of said outer sleeve, and carrying thereabout a plurality of locking balls disposed for coaction with said cam surface;

(e) a spring disposed about an operating end of said inner sleeve and urging same towards said locking end of said outer sleeve such that said locking balls are urged by said sam surface against an outer surface of said locking post, when said locking post is disposed within said hollow of said inner sleeve to secure said locking post and outer sleeve assembly together and thereby the cover members;

(f) said operating end of said inner sleeve extending through said rib and being formed with an aperture diametrically extending therethrough; and

(g) an operating member formed from a unitary length of material having a first end and a second end and being formed to a predetermined configuration so as to have an operating portion extending through and rotatably disposed in said aperture of said operating end of said inner sleeve wherein said operating member is in the form of a ring of wire with the operating portion extending radially outwardly away from said operating end, and the first and second ends of said wire meeting at the outward radial end of the operating portion so that neither said first end nor said second end is or can be disposed within said aperture of said operating end of said inner sleeve, said radially extending portion contacts said rib with rotation of the operating portion within the operating end as well as in sleeve rotations, and wherein the ring lies flat on said rib with the cover members closed.

4,201,493

VIBRATING ROLLER

Günther Braun, Haubahn 26, 56 Wuppertal 1, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 3,393
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803172
Int. Cl.[2] E01C *19/38*
U.S. Cl. 404—117 **18 Claims**

1. A vibrating roller, comprising:

a frame;

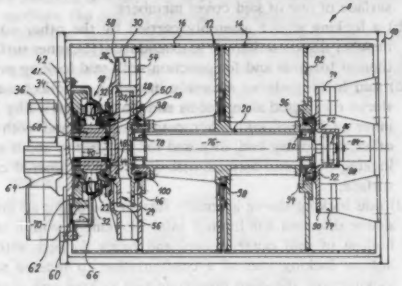
a roller barrel, mounted in said frame, said roller barrel including first and second partial roller barrels, said first partial roller barrel including a central shaft fixed thereto, and said second partial roller barrel being rotatingly mounted on said shaft;

means, connected to said roller barrel, for imparting vibratory motion to said partial roller barrels;

a prime mover, mounted upon said frame;

a differential, mounted upon said frame, said differential including a driving member and first and second driven members, said driving member being drivingly connected to said prime mover; and

first and second resilient force transmitting means, connecting said first and second driven members to said shaft of



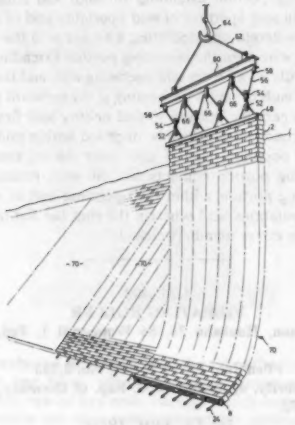
said first partial roller barrel and to said second partial roller barrel, respectively.

4,201,494

INSTALLING PANELS OF INTERLOCKING BLOCKS

Robert E. Crowe, 520 Nelson Ct., Milton, Ontario, Canada (L9T 3A6)

Filed Jaa. 16, 1979, Ser. No. 3,877
Int. Cl.[2] E02B *3/12, 3/14*
U.S. Cl. 405—17 8 Claims



1. Apparatus for laying preassembled panels of interlocking blocks comprising a bottom support bar for supporting the weight of the blocks when suspended in a vertical plane, a plurality of parallel suspension cables passing vertically through passages in said blocks and through said bottom support bar, and an upper support bar from which said cables are suspended at their top ends, the cables having coupling means at their bottom ends for releasably connecting thereto further wires or cables, the bottom support bar and the cables having mutually engageable abutment means whereby the weight of the panel may be transferred from the support bar to the cables, the bar being laterally moveable into and out of the plane of the panel between a position in which said abutment means are engaged and a position in which the bar is free of the cables.

4,201,495

PROTECTED AQUATIC SPORTS AREA

Paul Preus, 21 Smith Rd., Toms River, N.J. 08753

Continuation of Ser. No. 805,981, Jun. 13, 1977, Pat. No. 4,100,746. This application Jun. 30, 1978, Ser. No. 920,716
Int. Cl.[2] E02B *3/00*
U.S. Cl. 405—63 1 Claim

1. An isolated and protected aquatic sports zone in a portion of a larger shore-bounded body of water comprising a pair of spaced pier bulkheads defining the length of the protected zone along the shore of the body of water, a plurality of water impervious boom sections, each of said boom sections including a generally tubular flotation element and an integral water impervious depending skirt, each tubular element having an upstanding fin and hand grips spaced along said fin, each depending skirt having balasting means along the lower edge thereof and means connecting each tubular element and depending skirt in end-to-end relation, means connecting the ends of the connected boom sections to said pair of spaced pier bulkheads, a second skirt member, means releasably connecting the top of the second skirt member to the top of the flotation elements, further means releasably connecting the lower end of the integral skirt to said second skirt, said second skirt having a length greater than the depth of the water at the point of deployment and ballasting means carried at the lower end of said second skirt, anchor means, means attaching the anchor means to the boom sections at spaced intervals to thereby define a fixed protected aquatic sports zone, a pair of draft members positioned on opposite sides of the upper end of th integral skirt, means cross-connecting the draft members together through the integral skirt, characterized in that the means cross-connecting the draft members together through the integral skirt, comprises a rigid double-ended clevis with each clevis of the double-ended clevis having removable pins between the furcations thereof whereby the draft members and the means connecting the anchor means to the boom sections may be removably inserted between the furcations of each double-ended clevis.

4,201,496

WAVE MAKING MACHINES

Per F. Andersen, 58 Kenmount Rd., P.O. Box 8246, St. John's, Newfoundland, Canada (A1B 3N4)

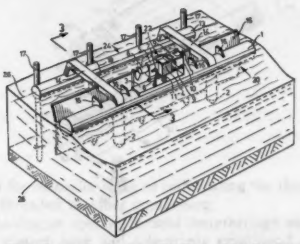
Filed Jan. 2, 1979, Ser. No. 643
Int. Cl.[2] E02B *15/02, 3/00;* E04H *3/20*
U.S. Cl. 405—79 18 Claims

1. A machine for making waves on the free surface of a body of liquid comprising:

(a) a member which is buoyant in the liquid,

(b) driving means mounted on and supported above the free surface of the water by the buoyant member to cause a periodic motion thereof relative to the surface of the liquid between a raised position and a lowered position, such relative motion causing substantial variations in the liquid displacement of the buoyant member,

(c) said buoyant member comprising:



(i) a longitudinally elongated wave making plunger,

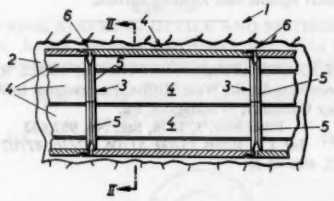
(ii) floatation means underlying said wave making plunger for supporting said wave making plunger with its longitudinal extent horizontally disposed at a level with respect to the free surface of the water when in use such that the plunger displacement is substantially zero when in said raised position.

4,201,497

APPARATUS FOR PRODUCING A WALL

Wolfgang Artweger, Windischgarsten, Austria, assignor to Artweger-Industrie-Gesellschaft m.b.H., Windischgarsten, Austria

Filed Sep. 25, 1978, Ser. No. 945,101
Claims priority, application Austria, Sep. 30, 1977, 6972/77
Int. Cl.[2] E01G *5/06*
U.S. Cl. 405—150 **10 Claims**



1. An apparatus for producing a wall, which comprises

(a) a plurality of support members spaced from each other and

(b) like casing elements supported at respective ends thereof on the support members, at least the surfaces of the casing elements being fire-retardant and each one of the casing elements including

(1) two casing plates spaced from each other and consisting of shape-retaining synthetic resin,

(2) end and side walls extending between the two casing plates,

(3) connecting flanges constituted by portions of the casing plates projecting beyond at least one of said walls,

(4) a set of substantially parallel plate elements comprised of glass fiber reinforced synthetic resin or polyurethane foam, the plate elements being substantially parallel to at least one of the walls, the plate elements connecting the casing plates to provide a shape-retaining support for the casing plates and to transmit between the plates stress and pressure forces to which the casing element is subjected, and

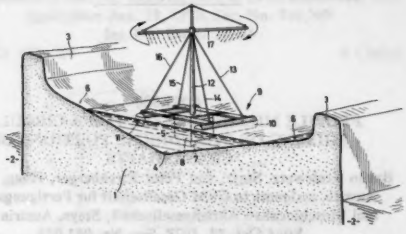
(5) the casing elements defining cavities defined by the casing plates and end walls, the cavities of adjacent ones of the casing elements being in communication for the formation of conduits.

4,201,498

METHOD FOR RAPIDLY MELTING AN ICEBERG

Georges L. Mougin, Paris, France, assignor to ITI Limited, Paris, France

Filed Mar. 8, 1978, Ser. No. 884,407
Claims priority, application France, Mar. 8, 1977, 77 06702
Int. Cl.[2] F25D *1/00*
U.S. Cl. 405—303 **9 Claims**



1. Method of melting an iceberg comprising the steps of:

(1) using melted water from the iceberg to artificially induce a rain of cold fresh water; and

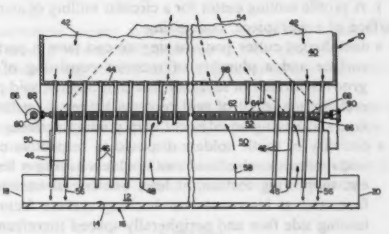
(2) allowing said rain of cold fresh water to fall upon said iceberg from the melting thereof.

4,201,499

MATERIAL TREATMENT SYSTEM

Walter E. Buske, Amesbury, and Charles W. Hoyt, Belmont, both of Mass., assignors to Wolverine Corporation, Methuen, Mass.

Filed Jul. 27, 1978, Ser. No. 928,530
Int. Cl.[2] B65G *53/16*
U.S. Cl. 406—75 **10 Claims**



1. Apparatus for the substantially horizontal conveyance of solid particulate material comprising

pan structure including a gas impervious base forming a transport surface having an inclination less than that which would cause gravity flow of the particulate material to be conveyed, and side walls extending along the edges of said base to form with said base an open ended trough that defines a particle treatment zone,

an array of spaced nozzles extending downwardly toward said pan structure and terminating in orifices disposed to direct gas passing through said nozzles in an array of gas jets downwardly towards said base,

means for changing the angle of inclination of said gas jets so

that said gas jets may be inclined at a small but effective angle to the normal to said base for affecting the rate of movement of particulate material through said treatment zone,

means for exhausting gases emanating from said nozzles upwardly away from said pan structure between said nozzles, and

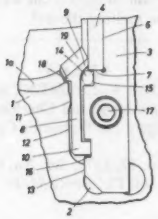
means for flowing gas through said nozzles at high velocity to fluidize particles on said pan structure, said particles advancing along said pan structure and out the end thereof under the influence of the resultant horizontal gas jet component imparted to the individual fluidized particles as a result of said inclined gas jets.

4,201,500

PROFILE MILLING CUTTER FOR A CIRCULAR MILLING OF CYLINDRICAL PORTIONS OF CRANKSHAFTS

Bruno Kralowetz, Steyr, and Peter Kirchberger, Haag, both of Austria, assignors to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed Oct. 12, 1978, Ser. No. 951,053
Claims priority, application Austria, Oct. 19, 1977, 7470/77
Int. Cl.[2] B26D *1/12*
U.S. Cl. 407—43 **12 Claims**



1. A profile milling cutter for a circular milling of an outside surface of a workpiece, comprising

a disc-shaped cutter body having an end face, a peripheral surface and a plurality of recesses consisting of radial grooves formed in said end face and open at said peripheral surface, each of said recesses having a leading side face and having an adjacent chip guiding surface,

a plurality of tooth holders disposed in respective ones of said recesses, each of said tooth holders having at least one end-supporting surface, at least one lateral backing surface, and at least one rear backing surface facing said leading side face and peripherally spaced therefrom,

a plurality of tooth plates, at least one of which extends in each of said recesses and is peripherally spaced from said leading side face and in engagement with said end-supporting surface and said lateral and rear backing surfaces of one of said tooth holders, and

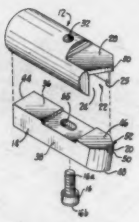
a plurality of elongated resilient holding-back members, each of which is disposed in one of said recesses and has a radially inner foot portion held between said leading side face of said one recess and one of said tooth holders, a radially outer head portion resiliently urging one of said tooth plates against said rear backing surface of one of said tooth holders, and an intermediate portion bearing on said leading side face of said one recess.

4,201,501

CUTTING TOOL

Flory M. Day, 4893 W. 210 St., Fairview Park, Ohio 44126

Continuation of Ser. No. 810,318, Jun. 27, 1977, abandoned.
This application Nov. 13, 1978, Ser. No. 960,008
Int. Cl.[2] B26D *1/00, 1/12*
U.S. Cl. 407—92 **3 Claims**



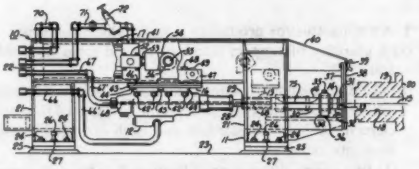
1. A cutting tool comprising, in combination, a holder, a separable insert securable to said holder and having a cutting edge, and means for securing said insert to said holder; said holder having a locating surface for locating the tool insert, and said tool insert having a planar positioning surface that seats against said locating surface, a cutting edge in the plane of said positioning surface, and a bit or tip integral with said insert, forming said cutting edge; said locating surface of the holder and said positioning surface of the insert being in mutual contact only at locations on opposite sides of said means for securing the insert to the holder and separated by an area across the insert free from mutual contact, said holder having a threaded aperture opening through said locating surface, and said insert having a through-aperture spaced from said cutting edge, opening through said positioning surface, and sufficiently larger than said securing means in a direction extending toward the cutting edge to permit adjustment of the insert in that direction; and said means for securing the insert to the holder being a threaded fastener constructed to extend through said insert aperture, engage said threaded aperture, and clamp said insert against said locating surface.

4,201,502

METHOD AND APPARATUS FOR TAP HOLE REAMING

Lawrence Skendrovic, West Mifflin, Pa., assignor to William M. Bailey Company, Washington, Pa.

Filed Nov. 3, 1978, Ser. No. 957,662
Int. Cl.[2] B23B *35/00, 51/06, 27/10, 41/02*
U.S. Cl. 408—1 R **12 Claims**



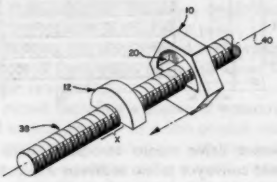
1. A tap hole reamer including a support frame with a drifter drill motor having the rearward end of an elongated hole reamer drivingly coupled thereto for reaming rotations on its longitudinal axis and said motor mounted to a carriage movable along said frame by air cylinder means to advance and retract said reamer, the improvement comprising, said hole reamer consisting of a hollow tubular body having a longitudinal relief slot penetrating the side thereof and an annularly shaped reaming head concentrically and removably secured to the forward end of said body, and means to feed air forward under pressure into the rearward hollow end of said body.

4,201,503

THREAD RECONDITIONING TOOL

William G. Nannen, Box 242, Smethport, Pa. 16479

Filed May 1, 1978, Ser. No. 901,619
Int. Cl.[2] B23G 5/04
U.S. Cl. 408—215 16 Claims



1. A tool for reconditioning or rethreading the threads of an externally threaded member comprising:

a collet having an opening formed therethrough and adapted to be placed over and selectively positioned along the longitudinal axis of an externally threaded member, a smooth portion of the inner surface of said opening adapted to contact the tips of the threads of the threaded member to thereby function as a guide surface;

a threading element having thread cutting means on an inner surface thereof adapted to engage the threads of the externally threaded member and having a locating surface on another portion thereof; and

at least one locating surface associated with said collet adapted to abut said locating surface of said threading element to maintain said cutting means in a fixed, spaced relationship relative to said guide surface;

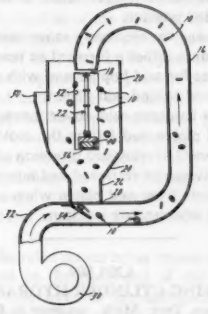
whereby said threading element is selectively positioned along an externally threaded element with said thread cutting means engaging the threads of the threaded member and said collet is positioned with said respective locating surfaces on said collet and threading element abutting one another and said guide surface contacting the tips of the threads of the external member.

4,201,504

O-RING STACKING DEVICE AND METHOD

Robert A. Arnold, and Raymond Warren, both of La Mirada, Calif., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Apr. 14, 1978, Ser. No. 896,320
Int. Cl.[2] B65G 57/03
U.S. Cl. 414—27 18 Claims



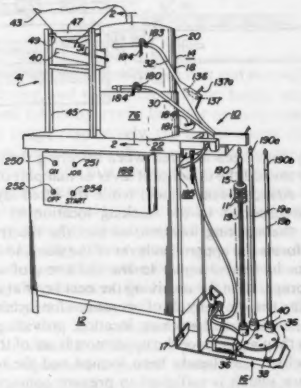
10. An apparatus for collecting and stacking a plurality of torroidal-shaped articles of substantially shape-retaining structure having a central opening therethrough comprising duct means, blower means for passing a substantially laminar flow gas stream through said duct means, injector means for introducing said articles into said gas stream for entrainment therein, a collector assembly including at least one collector member removably disposed in intercepting relationship in said duct means with the upstream end portion of said collector member disposed substantially parallel to the direction of flow of said gas stream for collecting and stacking intercepted articles, and recirculating means disposed downstream of said collector assembly for recirculating the non-intercepted articles to said injector means.

4,201,505

CORE-SPACER-CORE MANDREL LOADER

James P. Gerhart, deceased, late of Warminster, Pa., and Merle A. Gerhart, executrix, 1506 Pheasant Dr., Warminster, Pa. 18974

Division of Ser. No. 792,235, Apr. 29, 1977, which is a continuation of Ser. No. 629,416, Nov. 6, 1975, abandoned. This application Jun. 19, 1978, Ser. No. 916,769
Int. Cl.[2] B65G 57/06
U.S. Cl. 414—27 9 Claims



1. A machine for alternately loading cores and spacers upon a mandrel comprising

a first hopper and a first chute assembly for cores,

a second hopper and a second chute assembly for spacers,

said chutes terminating with one chute overlying the other chute,

escapement means for receiving cores and spacers and through which said cores and spacers pass, and

a mandrel aligned with said escapement means to alternately receive said cores and spacers,

said escapement means permitting only one pair of cores and spacers to pass through the escapement means at any one time,

each pair of cores and spacers being placed upon said escapement means prior to being released therefrom.

4,201,506

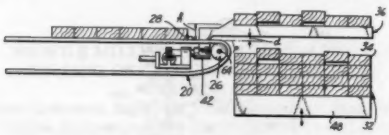
LUMBER-STACKING METHOD AND APPARATUS

Alpo Rysti, Frisansintie 22, 02240 Espoo 24, Finland

Filed May 10, 1978, Ser. No. 904,504
Int. Cl.[2] B65G 57/18
U.S. Cl. 414—68 7 Claims

1. In a lumber stacking method, the steps of conveying a layer of lumber in a horizontal plane to a lifting location which is situated in advance of and adjacent to a stacking location where a stack of lumber is to be formed, that part of a stack which has already been formed at said stacking location having an upper iayer which has an upper surface situated at least approximately in said horizontal plane, then lifting the layer of lumber which has arrived at said lifting location from beneath

with arms which have only smooth surfaces engaging the lifted layer at the underside thereof and which extend in the direction of travel of said layer toward said stacking location, while simultaneously situating behind the last piece of timber of said layer which is at the end thereof which trails in the direction of movement toward the stacking location a stop to prevent rearward movement of the layer with respect to said arms, the lifting of said layer at said lifting location by way of said arms elevating said layer to an elevation higher than said horizontal plane, and while said layer is thus situated at the latter elevation, advancing said arms to a location over the uppermost layer of that part of the stack which has already been formed, the travel of said arms over said uppermost layer of that part of the stack which has already been formed being continued until the lifted layer is carried by said arms is situated vertically in alignment above the uppermost layer of that part of the stack which has already been formed, then lowering said arms and the layer carried thereby toward said uppermost layer of the stack which has already been formed, retracting said arms back to said lifting location while said arms are at the elevation to



which they have been lowered when lowering the previously lifted layer toward the uppermost layer of that part of the stack which has already been formed, while the lifted layer which has been transported to the stacking location by said arms remains at the stacking location, so that the thustransported layer now forms the uppermost layer of the stack, lowering the stack by an increment equal to the thickness of a layer of lumber in preparation for receiving the next layer at said stack, and repeating the above cycle of operations for forming a stack of a given height at said stacking location, providing between the arms as they move over the uppermost layer of that part of the stack which has already been formed and the uppermost layer a space which is sufficient to prevent contact between said arms and any timber pieces of the uppermost layer of the stack which has already been formed which may be crooked and which may extend to an elevation higher than other parts of the uppermost layer of that part of the stack which has already been formed, and tilting said arms respectively about horizontal axes which extend parallel to those portions of the arms which engage a layer of lumber in order to raise and lower a layer of lumber carried by said arms.

4,201,507

APPARATUS FOR HANDLING ROD-LIKE ARTICLES

Dennis Hinchcliffe; Frank Heybourn, and Eric A. Luddington, all of London, England, assignors to Molins Limited, England

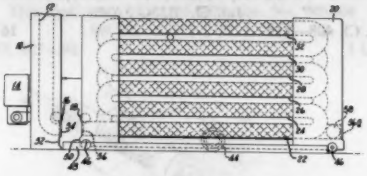
Continuation-in-part of Ser. No. 622,709, Oct. 15, 1975, Pat. No. 4,078,648. This application Apr. 11, 1977, Ser. No. 786,493

Claims priority, application United Kingdom, Apr. 15, 1976, 15750/76; Jul. 28, 1976, 31362/76

Int. Cl.[2] B65G *1/00*

U.S. Cl. 414—331 **31 Claims**

1. A conveyor system for rod-like articles, including a reservoir, the reservoir including means for receiving a multi-layer stream of rod-like articles delivered substantially horizontally from a supply in a direction transverse to the lengths of the articles; conveyor means forming a part of the reservoir for conveying the articles in a multi-layer formation within the reservoir; means for supporting the reservoir so that it is mobile; means for storing and retaining the articles in the reservoir so that it may be separated and moved away from said supply including means for confining a leading end of the stream delivered into the reservoir during conveyance by said conveyor means; and drive means for said conveyor means, said drive means including drive connecting means movable with said reservoir and adapted to be releasably connected to sta-



tionary output drive means associated with said supply, whereby said conveyor means is driven when said reservoir is in an operative position with respect to said supply.

4,201,508

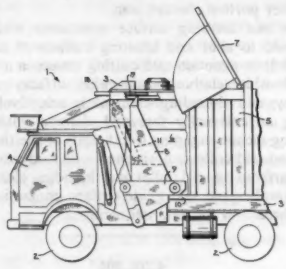
PLATEN SLIDE COVER FOR REFUSE HANDLING SYSTEMS

John R. Brisson, Kingsford, Mich., assignor to Lodal, Inc., Kingsford, Mich.

Filed May 12, 1978, Ser. No. 905,163

Int. Cl.[2] B65F *3/00*

U.S. Cl. 414—525 R **14 Claims**



1. In a refuse collection vehicle:
(a) a frame,
(b) a hopper on said vehicle,
(c) a refuse storage compartment disposed rearwardly of said hopper,
(d) a refuse handling platen normally disposed in said hopper and movable between a retracted, an intermediate and a fully extended position,
(e) motive means to selectively move said platen between said positions in either a forward or rearward direction,
(f) cover means for said hopper and with said cover means being disposed behind said platen,
(g) and means to cause said cover means to continuously engage said platen and follow the movement thereof in either a forward or rearward direction when said platen is disposed between its retracted and intermediate positions and to separate from said platen when said platen moves beyond said intermediate position.

4,201,509

BACKHOE SWING CYLINDER HYDRAULIC CIRCUIT

Charles A. Hansen, Troy, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1978, Ser. No. 948,597

Int. Cl.[2] E02F *3/32, 3/62*

U.S. Cl. 414—694 **10 Claims**

1. A hydraulic system for actuating a swing post mounted backhoe,

the swing post being mounted on a vehicle for swinging movement about a vertical axis,

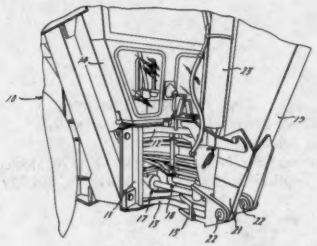
the hydraulic system including a pair of double acting hydraulic actuators each of which has a cylinder that is pivotally mounted on a support frame of the vehicle, double acting piston means within the cylinder, and a piston rod extending from the piston means through the rod end of the cylinder to the swing post,

the piston rods being pivotally coupled to the swing post on opposite sides of the vertical pivot axis about which the swing post is swingable,

a hydraulic circuit including a source of pressurized fluid connected to each actuator by a first conduit means communicating with the rod end of one actuator and the head end of the other actuator, and a second conduit means communicating with the head end of the one actuator and the rod end of the other actuator,

control valve means having an operating member movable from a neutral position to an actuator operating position in which fluid is directed through a predetermined one of the conduit means to the rod end of one of the actuator cylinders and to the head end of the other actuator cylinder to cause the swing post to swing in a predetermined direction,

the pressure of the fluid acting on the actuator cylinders causing the piston in the one actuator cylinder to move



from the rod end toward the head end and the piston of the other cylinder to move from the head end toward the rod end until the other cylinder piston rod crosses over the swing post pivot axis to the same side of the latter as the piston rod of the one actuator cylinder whereupon the direction of movement of the piston of the other cylinder reverses and both pistons move from the rod ends toward the head ends of their respective cylinders,

and cut-off means operative to prevent discharge of fluid from the head end of the one actuator cylinder as the swing post approaches a predetermined position relative to the end of its side swing movement,

wherein the improvement comprises:

relief means bypassing the cut-off means to permit controlled discharge of fluid trapped in the one actuator cylinder head end to cushion the deceleration of the swing post,

the fluid from the relief means being routed through the one conduit means to the head end of the other cylinder whereby the other cylinder provides additional deceleration torque as long as no voiding occurs therein in the event the control valve means operating member is returned to a neutral position before the swing post reaches the end of its side movement,

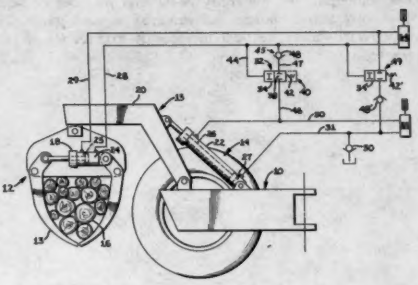
the fluid from the head end of the one actuator cylinder providing the necessary volume of fluid to the other cylinder to prevent voiding.

4,201,510

AUTOMATIC GRAPPLE CONTROL SYSTEM

John R. Muntjanoff, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 27, 1978, Ser. No. 900,632
Int. Cl.[2] B66C 3/16
U.S. Cl. 414—730 **8 Claims**



1. In a grapple tong system having first and second hydraulic lines for closing and raising the grapple tongs, respectively, and third and fourth hydraulic lines for opening and lowering the grapple tongs, respectively, the improvement comprising:

first means for automatically, controllably passing fluid from the second to the first hydraulic line in response to a first preselected pressure in said first hydraulic line and a second pressure in said second hydraulic line, said second pressure being greater than said first pressure, said first means including a first controlling valve connected to the first and second hydraulic lines and third means for controlling the passage of fluid in a single direction from the second hydraulic line, through the first controlling valve and to the first hydraulic line, said first controlling valve being movable between a first position at which said first valve is open and a second position at which said first valve is closed and being continuously biased toward its second position and movable toward its first position in response to pressure in the first hydraulic line; and

second means for controllably communicating said third and fourth hydraulic lines, said second means including a second controlling valve connected to the third and fourth hydraulic lines and movable between a first position at which said second valve is open and a second position at which said second valve is closed, said second controlling valve being continuously biased toward its second position and movable toward its first position in response to pressure in said first hydraulic line.

4,201,511

DEVICE FOR HANDLING CONTAINERS

Georges M. Charles, Montceau les Mines, France, assignor to Potain Poclain Materiel (P.P.M.), Montceau les Mines, France

Filed May 24, 1978, Ser. No. 909,046
Claims priority, application France, Jun. 6, 1977, 77 17249
Int. Cl.[2] B66F 9/00
U.S. Cl. 414—738 **2 Claims**

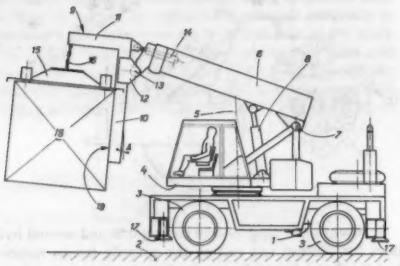
1. In apparatus for handling large containers wherein the apparatus has a platform mounted on a transporting device, the improvement comprising:

(a) a support arm pivotally carried by the platform adjacent one end of said support arm for rotation in a vertical plane;

(b) first power means operably connected between said support arm and the platform for selectively rotating said support arm;

(c) an L-shaped arm having a generally horizontal member and a generally downward-facing vertical member, said

L-shaped arm being pivotally carried by the other end of said support arm for rotation in a vertical plane, said generally downward-facing vertical member of said L-shaped arm being a telescoping arm and including second power means for selectively extending and retracting said generally downward-facing vertical member, said L-shaped arm being pivotally carried by said support arm at a point on said generally downward-facing vertical member such that said generally horizontal member of said L-shaped arm is raised and lowered as said generally downward-facing vertical member is extended and retracted respectively;



(d) third power means operably connected between said L-shaped arm and said support arm for selectively rotating said L-shaped arm; and,

(e) gripping means suspended from said generally horizontal member of said L-shaped arm for releasably gripping the top of large containers whereby large containers can be gripped by said gripping means and be selectively supported simultaneously along the side thereof by rotating said L-shaped arm to place said generally downward-facing vertical member into or out of engagement with the side of the container.

4,201,512

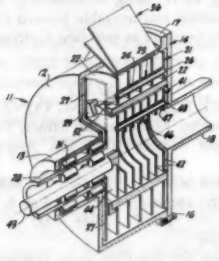
RADIALLY STAGED DRAG TURBINE

Chester W. Marynowski; F. Michael Lewis, both of Mountain View; Charles E. Lapple, Los Altos Hills; Robert G. Murray, Palo Alto, and Konrad T. Semrau, Menlo Park, all of Calif., assignors to Cerla N.V., Netherlands Antilles

Filed Aug. 23, 1977, Ser. No. 826,977

Int. Cl.[2] F01D *1/36*

U.S. Cl. 415—90 **4 Claims**



1. An improved multistage drag turbine comprising:

a cylindrical casing having nozzle means extending substantially tangentially therethrough for directing a driving fluid into the casing at a predetermined velocity and an axial opening for exhausting said fluid from said casing,

a first-stage rotor having a plurality of parallel closely-spaced annular discs closely fitting the interior circumference of said casing and having an end plate carrying said discs and including a first shaft extending axially from said casing,

a second-stage rotor communicating with said axial casing opening and having a plurality of parallel closely-spaced discs disposed radially inward of said first-stage rotor and mounted for rotation upon a second shaft extending from said casing concentrically with said first shaft of said first-stage rotor, and

an annular nozzle ring disposed between said first and second stage rotors and mounted on said first stage rotor for rotation therewith with at least one interstage nozzle extending therethrough for directing fluid from said first stage rotor in a direction substantially opposite to the direction of rotation of said first stage rotor and substantially tangentially onto discs of said second stage rotor adjacent the periphery thereof at a predetermined velocity,

whereby said first and second-stage rotors are separately driven in opposite directions of rotation at predetermined rotational velocities to utilize a maximum amount of fluid energy.

4,201,513

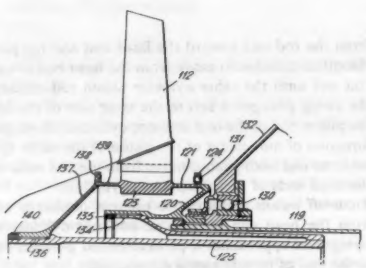
GAS TURBINE ENGINES

Stephen Sales, Bristol, England, assignor to Rolls-Royce (1971) Limited, London, England

Continuation of Ser. No. 748,371, Dec. 7, 1976, abandoned. This application Sep. 20, 1978, Ser. No. 944,029

Int. Cl.[2] F01D *5/02*

U.S. Cl. 416—2 **4 Claims**

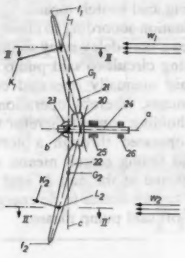


1. A gas turbine engine comprising a rotor, a plurality of blades carried by the rotor, a main shaft, a mounting structure for supporting the rotor on the shaft and including a driving connection for transmitting drive between the rotor and the main shaft and which includes a portion dimensioned to fracture when out-of-balance loads on the rotor caused by loss of at least part of a blade from the rotor exceed a predetermined magnitude, and a separate torsionally stiff, drive means interconnecting the rotor and the shaft to support the rotor and to maintain a driving connection between the rotor and shaft when the driving connection of the mounting structure has broken, said separate drive means being transversely more flexible than said driving connection and sufficiently transversely flexible to support rotation of the rotor on the main shaft about an altered axis.

4,201,514
WIND TURBINE

Ulrich Huetter, Schlierbacher Strasse 93, D-7312 Kirchheim, Fed. Rep. of Germany

Filed Dec. 5, 1977, Ser. No. 857,277
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1976, 2655026
Int. Cl.[2] F03D 7/04
U.S. Cl. 416—37 36 Claims



1. A wind turbine, including an axial flow through wing rotor; said rotor comprising a rotor hub and at least one wing blade having a pitch with respect to the wind flow so as to be adapted to rotate with said hub in the wind flow, said wing blade being supported by said hub and projecting therefrom; a rotor shaft; said hub being supported on said rotor shaft and being connected thereto such that rotation of said rotor rotates said rotor shaft;

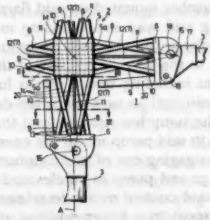
a bearing seat for carrying said rotor shaft for rotation in said bearing seat; said seat being rotatable around an axis which extends substantially vertically for turning said rotor into the wind; each said wing blade being inclined relative to the general plane of rotation of said rotor;

means for enabling said rotor, which is comprised of said hub and said wing blade, to deflect under the effect of a transverse force acting on said rotor across the wind direction, which transverse force is the resultant of various wind velocities at various regions of the plane of revolution of said rotor, and said deflection of said rotor initiating a reduction of the transverse force acting on said rotor.

4,201,515
ROTOR WITHOUT FLAPPING HINGES AND WITHOUT LEAD-LAG HINGES

Hans Derschmidt, Putzbrunn, and Hermann Sahlstorfer, Ottobrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,339
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 2733101
Int. Cl.[2] B64C 11/12, 11/48; F16D 3/00; B64C 27/48
U.S. Cl. 416—134 A 9 Claims

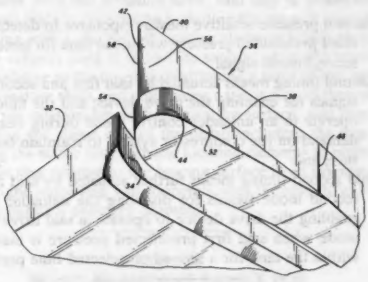


1. A rotor without flapping hinges and without lead-lag hinges, especially for rotary wing aircraft, comprising rigid rotor head center means having a center (M), a plurality of rotor blade means, flexible coupling means securing said rotor blade means to said rigid rotor head center means, said flexible coupling means comprising for each rotor blade means a plurality of rod means made of fiber reinforced composite material, said rod means being flexible relative to bending and torsion loads, each of said rod means having a central longitudinal axis, said rod means connecting each of said rotor blade means to said rotor head center means, first means securing said rod means to said blade means, and second means securing said rod means to said rotor head center means, said rod means forming first and second cones for each rotor blade means, said rod means being so arranged that their central longitudinal axes coincide with a generatrix of said first and second cones which have a common central cone axis, all of said first cones having their base in the respective rotor blade means, all of said second cones having their base in said rotor head center means all of said first cones having their tips substantially in said center (M) of said rotor head center means.

4,201,516
IMPELLER FOR A CENTRIFUGAL MACHINE

Michael R. Kolk, Export; Ralph E. Beck, Jeannette, and Roy E. Hoyle, Greensburg, all of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 8, 1978, Ser. No. 913,622
Int. Cl.[2] F01D 5/30; B21K 3/04
U.S. Cl. 416—213 R 2 Claims



1. A blade for a turbomachine comprising:

a leading edge formed of a relatively thin top section for contacting the fluid flowing through said machine, and a relatively thick bottom section, with said bottom section being tapered from the front of the leading edge of the blade to the end of the leading edge, with the widest portion of the bottom section being at the front of the leading edge.

4,201,517
AUTOMATIC CONTROL SELECTOR FOR A COMPRESSOR SYSTEM

John R. Ferguson, 6250 LBJ Freeway, Dallas, Tex. 75240

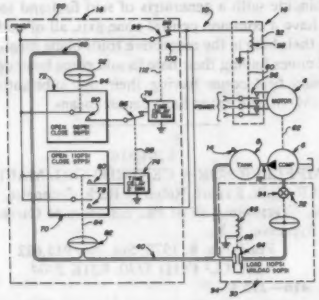
Filed Feb. 3, 1978, Ser. No. 875,112
Int. Cl.[2] F04B 49/00
U.S. Cl. 417—12 8 Claims

1. An automatic control selector for a compressor system including a tank for containing pressurized gases, a compressor for pressurizing gases within the tank, an unloader for mechanically unloading the compressor to prevent the compressor from pressurizing gases, an unloader control device for selectively enabling and disabling the unloader, and a drive device for mechanically driving the compressor comprising:

first pressure sensitive means for enabling the drive device to operate in a drive control mode upon detection of a first

preselected pressure within the tank and for disabling the drive device upon detection of a second preselected pressure within the tank, said first pressure sensitive means for controlling the operation of the compressor during light load demand on the compressor system to maintain tank pressure, such that the unloader is disabled during the drive control mode to prevent the unloader from disabling the compressor;

first timing means actuated by said first pressure sensitive means for generating a first mode signal when said second preselected pressure within the tank is not reached within a preselected time period after enabling of the drive device;



second pressure sensitive means responsive to detection of a third preselected pressure within the tank for generating a second mode signal;

second timing means actuated by said first and second mode signals for enabling the drive device and the unloader to operate in an unloader control mode during heavy load demand on the compressor system to maintain tank pressure; and

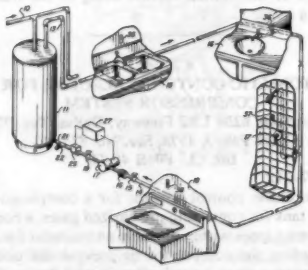
said second timing means further actuated by said first and second mode signals for disabling the unloader and for enabling the drive device to operate in said drive control mode when said first preselected pressure is maintained within the tank for a second preselected time period.

4,201,518

RECIRCULATING FLUID PUMP CONTROL SYSTEM

Alden Stevenson, 23448 N. Church Rd., Scottsdale, Ariz. 85255

Filed May 12, 1978, Ser. No. 905,359
Int. Cl.[2] F04B *49/06*
U.S. Cl. 417—12 **9 Claims**



1. A hot water circulating system including in combination:

a source of hot water supply having an outlet and an inlet;

a supply pipe and a return pipe interconnected in a loop between the outlet and the inlet, respectively, of said source of hot water supply;

a plurality of outlet taps connected to said supply pipe;

an electrically controlled pump means in said loop between the outlet and the inlet to said source of hot water supply;

switch means connected in electrical circuit with said pump means for operating said pump means under control of operation of said switch means; and

a plurality of manually operated control means, a different one of which is located adjacent each of said outlet taps for operating said switch means.

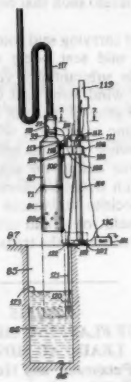
5. The combination according to claim 1 wherein said switch means comprises a time delay relay switch means energized to close an operating circuit to said pump means in response to operation of said manually operated control means, and a timing circuit means, whereby operation of said relay switch means closes a holding contact therefor to maintain said relay switch means operated through a normally closed switch operated by said timing circuit means, said normally closed switch being opened at the end of said pre-determined time interval by said timing means to de-energize said relay switch means and turn off said pump means.

4,201,519

THROUGH FLOW SUMP PUMP

Karl O. Niedermeyer, 17W068 North St., Bensenville, Ill. 60106

Division of Ser. No. 793,402, May 3, 1977. This application Apr. 4, 1979, Ser. No. 26,922
Int. Cl.[2] F04B *49/06*
U.S. Cl. 417—38 **3 Claims**



1. In a sump pump apparatus including a pump having a frame member, an electric motor, a pump intake opening and a pump discharge connection, and for use in conjunction with a sump in which liquid may accumulate, the improvement comprising:

fixed means adjacent said sump and forming a substantially vertical way;

a carriage member mounted on said fixed means for movement along said way and including means connected to said pump for positioning said pump in a vertical position in relation to the vertical position of the carriage;

control means including sensor means having at least part thereof positioned in said sump for detecting when the liquid in the sump has risen at least to a given level and connected to said pump motor for energizing said motor;

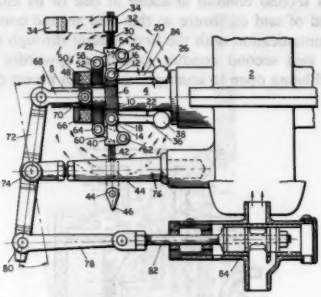
latch means engaging one of said members to normally hold said carriage and pump in an elevated position and connected to said control means to release said carriage for gravity descent to a lower position at which the pump intake is below said given level when said pump is energized by said control means.

4,201,520

STEAM TURBINE GOVERNOR

Clyde F. Berry, R.F.D. 7 Box 169 C, Manchester, N.H. 03104

Filed Jul. 25, 1977, Ser. No. 818,512
Int. Cl.[2] F01B *25/06*
U.S. Cl. 417—36 **4 Claims**



1. A steam turbine governor located exteriorly of the turbine housing and comprising a plurality of bell cranks mounted on pivots fixed to and spaced about the turbine shaft, each said crank mounted so as to swing in a plane that extends generally parallel to said shaft,

a fixed weight on one arm of each bell crank remote from its said pivot,

said turbine shaft having a cylindrical extension beyond said pivots, a bushing slidably mounted on said extension,

means including linkages connecting the other arms of said bell cranks with said bushing whereby when said first arms are swung outward by centrifugal force induced by rotation of said shaft, said bushing will rotate with said turbine shaft and will be caused to move axially along said extension,

a collar rotatably mounted on said bushing but axially secured thereto,

a steam valve, axially movable means for controlling the position of said valve,

a pivoted lever located exteriorly of said turbine housing and mounted on means associated with said turbine housing, means connecting the ends of said lever to said axially movable means and to said collar whereby said collar is maintained against rotation on said bushing,

means connected to said lever for applying a constant maximum force for resisting the outward swinging of said first arms as said turbine shaft rotates,

and other means exterior of said housing and operable while said turbine is running for adjustably diminishing said constant maximum force whereby the position of said steam valve at any given rotational speed of said turbine shaft may be varied.

4,201,521

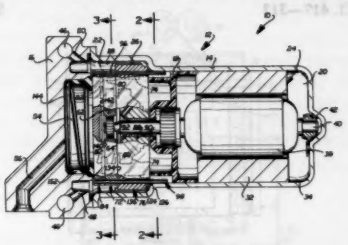
PUMP AND MOTOR ASSEMBLY

Robert E. Carlson, Livonia, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Mar. 20, 1978, Ser. No. 888,248
Int. Cl.[2] F04B *35/04*
U.S. Cl. 417—53 **42 Claims**

1. A pump and motor assembly comprising a housing having an inner surface which at least partially defines a chamber, a rotatable motor armature disposed in said chamber, a pump assembly disposed in said chamber, said pump assembly including a rotor connected with one end portion of said motor armature for rotation therewith, a stator ring circumscribing said rotor, a cheek plate cooperating with said stator ring and rotor to at least partially define a pumping chamber, bearing surface means disposed on said cheek plate for rotatably supporting said one end portion of said motor armature, and locating means extending between said cheek plate and the inner surface of said housing for positioning said cheek plate with said bearing surface means in a coaxial relationship with said motor armature and said stator ring, said locating means including a plurality of spaced apart members connected with said cheek plate and disposed in abutting engagement with the inner surface of said housing.

23. A method of assembling a pump and motor in a housing, said method comprising the steps of positioning the motor in the housing with an armature shaft of the motor free to move sideways relative to the housing, holding the armature shaft against sideways movement by positioning a support plate in



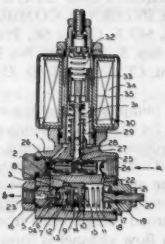
the housing with a bearing surface on the support plate in engagement with the armature shaft, said step of positioning the support plate in the housing including the steps of engaging the housing with a plurality of locating elements which project from the support plate to locate the support plate and bearing surface relative to the housing, positioning a rotor of the pump on the armature shaft, and positioning a stator ring of the pump in a coaxial relationship with the bearing surface, said step of positioning the stator ring of the pump including the step of engaging the stator ring with the locating elements to position the stator ring relative to the bearing surface in an orientation in which the stator ring will cooperate with the rotor to at least partially define a pumping chamber.

4,201,522

BOOST-RETARDING DEVICE FOR ELECTROMAGNETIC PLUNGER PUMP AND THE LIKE

Akira Toyota, Tokyo; Katsumi Nozawa, Yokohama, and Hideo Nomura, Fujisawa, all of Japan, assignors to Taisan Industrial Co., Ltd., Tokyo, Japan

Filed May 4, 1978, Ser. No. 902,940
Claims priority, application Japan, Jul. 8, 1977, 52-80998
Int. Cl.[2] F23N *1/00*; F04B *49/02*
U.S. Cl. 417—311 **32 Claims**



1. A boost-retarding device for a pump which comprises a main body containing a cylinder means having a suction side and a discharge side; plunger means slidably and reciprocatingly fitted into said cylinder means; leak passage communicat-

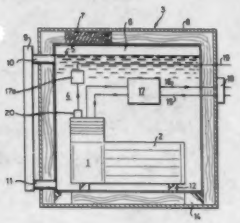
ing means extending from said suction side to said discharge side; said passage being divided by said plunger; adjustable spring means for biasing said plunger means toward said discharge side; and valve means for cutting off an outflow of fluid from said discharge side to said suction side responsive to movement of said plunger means toward said suction side.

4,201,523

DEVICE FOR COOLING AND SILENCING OF NOISE OF A COMPRESSOR OR VACUUM PUMP

Björn O. E. Olofsson, Åkervägen 6, S-190 40 Rosersberg, Sweden

Filed Jan. 23, 1978, Ser. No. 871,552
Int. Cl.² F04B *39/00, 39/06*
U.S. Cl. 417—312 **5 Claims**



1. Apparatus for cooling and silencing a pressure fluid device, such as a compressor or a pump, having inlet and outlet ports and which is driven by an electric motor, comprising

(a) a sealed container (3) containing a chamber in which said pressure fluid device and said motor are arranged, the bottom, side and top walls of said container each including a layer (7) of sound-absorbing material;

(b) a quantity of cooling and sound-absorbing liquid (4) filling the space in said chamber to a level above that of said device and said motor, whereby the device and motor and completely immersed in the liquid;

(c) inlet and outlet pipes (15, 16) extending through a wall of said container and connected at one end with the inlet and outlet ports of said device for supplying fluid to, and for removing fluid from, said device, respectively;

(d) heat exchanger means (9) arranged externally of said container; and

(e) input and outlet conduit means (10, 11) connecting said heat exchanger means with said chamber to permit the flow of liquid between said chamber and said heat exchanger means, thereby to modify the temperature of said liquid.

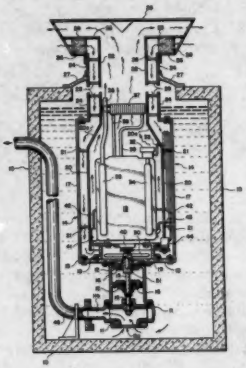
4,201,524

SUBMERSIBLE PUMP SYSTEM USING A SUBMERSIBLE INTERNAL COMBUSTION ENGINE

Richard S. Wilkins, 547 E. Center St., Provo, Utah 84601

Filed Sep. 5, 1978, Ser. No. 939,285
Int. Cl.² F04B *17/00, 35/00*
U.S. Cl. 417—364 **4 Claims**

1. A submersible pump system having a submersible internal combustion engine for driving the pump, said system comprising a water-tight, submersible enclosure; an internal combustion engine mounted within said enclosure; a shroud positioned between said engine and the sides of said enclosure so as to substantially surround the sides of said engine, with the lowermost end of said shroud being spaced from the bottom of said enclosure so that a flow channel is formed extending downwardly between the inside surface of said enclosure and the outside surface of said shroud, around the lower end of said shroud, and upwardly through the inside of said shroud around said engine; a submersible pump mounted on the exterior of said enclosure, said pump having a drive shaft extending into said enclosure through a water-tight seal between said pump and said enclosure; means for connecting the end of said drive shaft which extends into said enclosure to the output drive of said engine; a first conduit attached at one of its ends to the upper end of said shroud so that said first conduit is in flow communication with the inside of said shroud, said first conduit extending upwardly with its other end being open to the atmosphere; a second conduit attached at one of its ends to the upper end of said enclosure so that said second conduit is in flow communication with the first conduit through said flow channel, said second conduit extending upwardly with its other end being open to atmospheric air; fan means driven by



said engine which circulates atmospheric air downwardly through said second conduit, then through said flow channel so that the air flows downwardly through the space between the shroud and the walls of said enclosure, around the lower end of the shroud, and upwardly through the inside of the shroud around said engine, and then back up through said first conduit; means on said engine for drawing combustion air from the air which is circulated through the system by said fan means; and exhaust means on said engine which releases exhaust gases from said engine to the flow of air in said first conduit.

4,201,525

PERISTALTIC PUMP

Richard I. Brown, Northbrook, and Roger L. Leaf, Antioch, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 5, 1978, Ser. No. 921,896
Int. Cl.² F04B *43/12*
U.S. Cl. 417—477 **9 Claims**

1. A peristaltic liquid pump for external connection to plastic tubing carrying liquid to be pumped, which comprises:

a housing adapted for receiving a U-shaped portion of the plastic tubing, said housing including a main roller portion and a cover portion connected to said main roller portion;

a rotatable head located within said main roller portion;

a pair of rollers connected to said rotatable head and located with their roller surfaces facing said cover portion when said cover portion is closed;

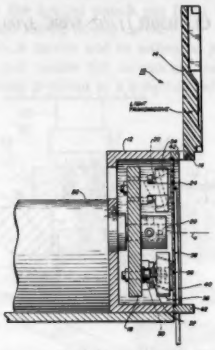
means rotatably connecting said rollers to said rotatable head;

means for coupling said rotatable head to an electric motor;

means defined by said housing for receiving the U-shaped portion of the plastic tubing so that the U-shaped portion will overlie the rollers during rotation of said rotatable head;

a membrane comprising a sheet overlaying said main roller

portion of said housing between said rollers and the U-shaped portion of the plastic tubing, said membrane having a relatively stiff surface for contacting said rollers and a relatively sticky surface for contacting said plastic tubing; and



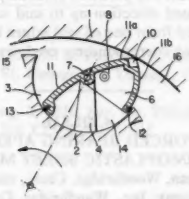
said cover portion being constructed to overlie said rollers, membrane and U-shaped portion of the plastic tubing and to urge the U-shaped portion of the tubing against the membrane and a roller when the cover portion is closed.

4,201,526

PIVOTED BLADE BETWEEN ROTOR AND STATOR HAVING ARCUATE SECTIONS

Shlomo Ostersetzer, and Eugenius Brochstein, both of P.O.B. 80, Gedera, Israel

Filed Dec. 2, 1977, Ser. No. 856,753
Claims priority, application Israel, Dec. 6, 1976, 51049
Int. Cl.[2] F01C *1/00, 19/00*
U.S. Cl. 418—136 **2 Claims**



1. An improved blade arrangement for sealing off in the radial direction a volume of fluid contained between a stator shell and a rotor rotating within said shell having an axis of rotation, said improved blade arrangement comprising:

said rotor including a recess having a cylindrical surface opening between said rotor and said shell;

a blade support mounted in said rotor recess and having a blade pivot end between said surface and said stator shell; and

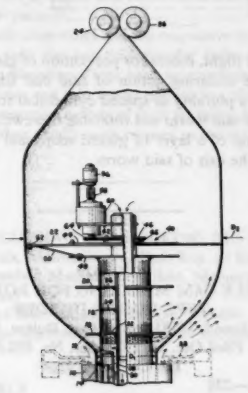
blade means pivotally mounted on said blade support pivot end around an axis substantially parallel to said rotor axis, said blade means having a center of gravity offset from said blade pivot axis, said blade means including a first and second arcuate section joined at a first end at a blade tip to form a composite profile, each arcuate section having a second free end, said blade tip contacting said stator shell and each said free end incuding a linear seal contacting said recess surface to form a sealed space between said blade profile and said recess surface wherein the resultant of all uniform forces acting normal to the surface of said blade profile at each point thereof, passes through said blade pivot axis.

4,201,527

APPARATUS FOR MANUFACTURING TUBULAR THERMOPLASTIC

David A. Verner, Bound Brook, and Henry A. Kipp, Bridgewater, both of N.J., assignors to Egan Machinery Company, Somerville, N.J.

Filed Jun. 30, 1978, Ser. No. 920,686
Int. Cl.[2] B29D *7/22*
U.S. Cl. 425—72 R **16 Claims**



1. Apparatus for forming tubular thermoplastic film comprising:

a die for extruding a tubular film of thermoplastic material of a first diameter,

a central conduit extending through said die and providing a source of gas for expanding said film to a second enlarged diameter and for cooling said film, said conduit including an inner passage with an opening for the return flow of said gas,

a pair of rollers spaced from said die for drawing and flattening said film, and

a variable outer diameter deflector disc positioned around said conduit between said die and rollers for controlling the flow of cooling gas at the internal surface of said film leaving said die, said disc being expandable from a diameter of reduced size to a diameter of increased size close to that of said enlarged diameter film; and

means for varying the outer diameter of said variable outer diameter deflector disc associated with said variable outer diameter deflector disc.

4,201,528

MECHANICAL MEANS FOR REDUCING CRACKING IN SOAP BARS

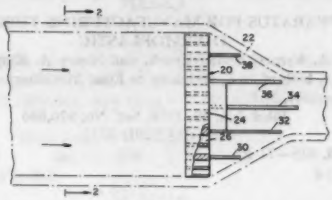
Charles F. Fischer, Park Ridge, and Cesare N. Marchesani, Maywood, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,929
Int. Cl.[2] B29F *3/06*
U.S. Cl. 425—209 **4 Claims**

1. A fitting for reducing surface cracks in soap bars produced by extrusion from soap plodder having a cone nozzle, said fitting adapted to be mounted within said cone nozzle comprising a base plate which engages the interior of said cone nozzle, said base plate having a plurlity of spaced linear parallel slots therein extending transversely of said base plate, and a

plurality of spaced parallel vanes secured to said base plate between said slots for inhibiting spiral movement of the soap mass after passing through said base plate, said vanes extending parallel to said slots.

4. In a plodder for extruding soaps having a worm provided



with an end flight, means for prevention of glazed soap generated by the smearing action of said end flight, said means comprising a plurality of spaced cylindrical studs fixed to said end flight of said worm and rotatable therewith for preventing the formation of a layer of glazed soap, said studs extending parallel to the axis of said worm.

4,201,529

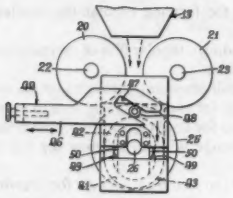
ADJUSTABLE CAM METERING FOR ROTATING TRAP TYPE DOUGH DIVIDER

Harold T. Atwood, 14151 Irving Ave., Dolton, Ill. 60419

Filed Oct. 30, 1978, Ser. No. 955,651

Int. Cl.[2] A21C *5/04*

U.S. Cl. 425—238 **3 Claims**



1. A metering device for dough comprising a hopper having an open bottom, a pair of co-acting rollers rotatably mounted in spaced relationship below said open bottom, means for driving said rollers in opposite directions to pull dough from said hopper through the space between said rollers, a third roller rotatably mounted below the space between said co-acting rollers, means for driving said third roller, said third roller having transversely extending grooves in its peripheral surface for receiving uniform amounts of dough pulled downwardly between said co-acting rollers, a rectangular block fitting snugly within each of said grooves, a pair of cam rollers projecting from the opposite ends of each of said blocks, a pair of cam tracks adjacent each end of said third roller for receiving and guiding each of said cam rollers in a closed path as said third roller is rotated, each of said cam tracks comprising a lower cam plate having a groove on its inner surface forming a lower cam track and an upper cam plate in vertical alignment with said lower cam plate and having a groove on its inner surface forming an upper cam track, a pin projecting outwardly from the back surface of each of said upper cam plates, and a pair of arms each having a diagonally extending slot engaging one of said pins, said arms being movable horizontally to move said upper cam plates vertically relative to said lower cam plates.

4,201,530

ARRANGEMENT FOR UNIFORM FILLING OF A MOLD CAVITY

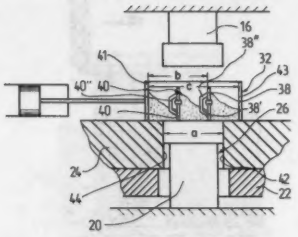
Willy Vogt, Zurich, Switzerland, assignor to Bucher-Guyer AG., Zurich, Switzerland

Filed Aug. 28, 1978, Ser. No. 937,057

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2741800

Int. Cl.[2] B30B *11/02*; B29C *3/00*

U.S. Cl. 425—260 **10 Claims**



1. An arrangement for filling at least one upwardly open cavity of a mold with bulk material, the mold having a surface, comprising in combination:

a feeding receptacle having an open bottom bounded by a plurality of edges and mounted for relative sliding movement along a surface of said mold in a predetermined direction from a receiving position, in which bulk material is introducible into the feeding receptacle, toward a discharging position, in which said open bottom of said feeding receptacle is juxtaposed with an open upper end of said cavity for discharge of the bulk material into said cavity, said open upper end of said cavity being circumferentially surroundable by the edges of said feeding receptacle, said open bottom of said feeding receptacle having a prearranged dimension between a leading and a trailing edge as considered in said predetermined direction, which exceeds a corresponding predetermined dimension of the cavity taken in the same direction, said feeding receptacle having at least one partition extending transversely of said predetermined direction up to said surface, said partition being spaced from one of said edges by a distance at least equal to said corresponding predetermined dimension of said cavity.

4,201,531

REINFORCED BEARING APERTURE IN THERMOPLASTIC SHEET MATERIAL

Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.

Division of Ser. No. 000,025, Jan. 2, 1979. This application May 9, 1979, Ser. No. 37,366

Int. Cl.[2] B29C *23/00, 17/00*

U.S. Cl. 425—290 **5 Claims**

1. Apparatus for forming a bearing aperture in thermoplastic sheet material of given thickness, wherein the resulting aperture has an axial thickness greater than said given sheet thickness, which comprises:

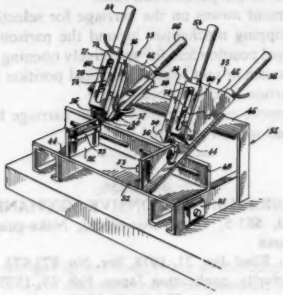
a fixture and dual punch means supported thereon, said fixture also having means for supporting said sheet material in position for the formation of the aperture therein by said punch means;

a first carrier comprising part of said dual punch means, means for advancing said first carrier in a longitudinal direction from a starting point to an advanced position and for retracting it again to said starting point;

a heated punch pin supported on said first carrier, said pin being sized approximately to the size of the aperture to be formed in said sheet material;

a first connection means joining said punch carrier to said advancing and retracting means, said connection incorporating means for shifting said punch pin transversely of said longitudinal direction of carrier movement to cause said heated punch pin to contact and penetrate said sheet material, thereby displacing thermoplastic material about the aperture, said connection also serving to laterally withdraw the heated punch pin from the aperture upon longitudinal return of the carrier;

a second punch carrier and an unheated punch pin mounted thereon, and means for advancing said second carrier from starting position in a longitudinal direction to align



said unheated punch pin with the previously formed aperture and for retracting said second carrier to starting position;

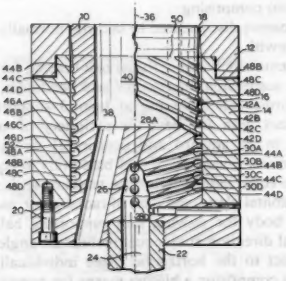
a second connection means joining said second punch carrier with its advancing and retracting means, said second connection also having means for shifting said second punch pin transversely of said longitudinal direction of movement to insert said unheated punch pin in said aperture for completing the formation of said displaced thermoplastic material into a collar-like hub surrounding the aperture, said second connection also serving to withdraw the unheated punch pin from the aperture upon completion of the formation of the aperture.

4,201,532

EXTRUSION DIES OF SPIRAL MANDREL TYPE

Robert J. Cole, 224 St. George St., Toronto, Ontario, Canada (M5R 2N9)

Filed Aug. 2, 1978, Ser. No. 930,209
Int. Cl.[2] B29D *23/04*
U.S. Cl. 425—380 **6 Claims**



1. An extrusion die of the spiral mandrel type comprising:

a central mandrel having a cylindrical outer surface, disposed about a longitudinal axis;

the mandrel having an inlet thereto and a plurality of outlets therefrom to the said outer surface, each outlet being connected to the inlet by a respective radially-extending cross-hole; and

a cylindrical die body surrounding the mandrel whereby there is formed between them an annular flow passage into which the said outlets discharge and which terminates in an annular die outlet orifice;

the said annular flow passage including a plurality of helical channels extending in the direction of flow of material in the annular passage, each helical channel being of progressively decreasing cross-sectional area in the said direction of flow, each outlet from the mandrel feeding into a respective helical channel and thence into the annular flow passage, so that all of the said outlets feed into the one said annular flow passage;

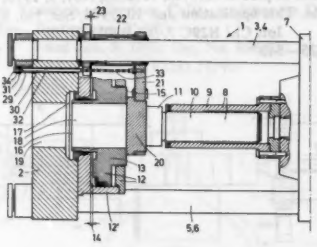
wherein the said cross-holes and the respective outlets therefor feeding into the one said annular flow passage are disposed in a plurality of sets, each set consisting of at least two cross holes and two respective outlets, the two cross holes and respective outlets of each set being disposed one above the other axially with respect to the said longitudinal axis.

4,201,533

MOLD CLOSING AND LOCKING DEVICE

Johann Holzschuh, Meinerzhagen, Fed. Rep. of Germany, assignor to Battenfeld Maschinenfabriken, Meinerzhagen, Fed. Rep. of Germany

Filed Dec. 12, 1978, Ser. No. 968,690
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1977, 2756717
Int. Cl.[2] B29F *1/06*
U.S. Cl. 425—451.9 **6 Claims**



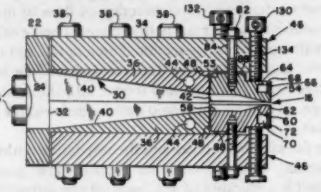
1. In combination with a mold closing and locking device including a fixed mold carrier plate, a stationary end plate, a movable mold carrier plate displaceable between the fixed mold carrier plate and the stationary end plate on support shafts through the action of a piston-cylinder unit, an adjustable distance-determining member extending between the piston-cylinder unit and the movable mold carrier plate, a pressure plate carried on a swivel arm for movement into and out of engagement between said piston-cylinder unit and said distance determining member, with the swivel arm being attached to a pivot bearing mounted on one of the aforesaid support shafts, with the pressure plate having a limited displacement range against spring tension means in a direction parallel to the movement of the movable mold carrier plate, and with the said swivel arm being movable by means of a pressurized pivot drive supported on another of the support shafts, the improvement comprising: said spring tension means being supported at said end plate and being connected to said swivel arm by means of a flexible tension member which acts proximate said pivot bearing, said pivot bearing being axially displaceable along its support shaft, said pressure plate being flat and rigidly attached to the free end of said swivel arm.

4,201,534

FOAM EXTRUSION DIE ASSEMBLY

Arthur L. Phipps, Los Osos, Calif., assignor to Condec Corporation, Old Greenwich, Conn.

Filed Jun. 14, 1978, Ser. No. 914,580
Int. Cl.[2] B29F *3/04, 3/08;* B29D *27/00*
U.S. Cl. 425—461 **27 Claims**



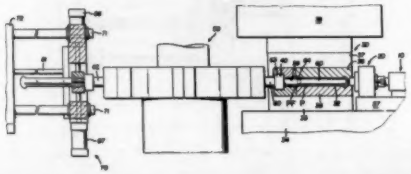
1. An extrusion die assembly comprising a body member, a pair of spaced lip members mounted on said body member each having a lip which together define an extrusion die orifice therebetween, and passage means for heating or cooling medium in at least one of said lip members extending along the lip to the lip in proximate relationship thereto, said passage means comprising in an outwardly opening channel in said one of said lip members and means to close said channel along the opening thereof thereby to define a passage.

4,201,535

APPARATUS FOR FORMING TUBULAR PLASTIC ARTICLES

Lawrence D. Ninneman, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 738,508, Nov. 3, 1976, Pat. No. 4,136,146. This application Jul. 10, 1978, Ser. No. 923,134
Int. Cl.[2] B29C *7/00;* B29D *23/02*
U.S. Cl. 425—548 **7 Claims**



1. An apparatus for forming an essentially tubular plastic parison for subsequent blowing into a container shape, comprising:

a turret rotationally mounted on a vertical axis and having a core pin radially extending therefrom;

a plurality of separate stations located around an arcuate path surrounding said turret, including an injection molding station and a parison ejection station;

means for intermittently rotating said turret to sequentially position said core pin at each said station;

a pair of horizontally positioned mold sections at the injection molding station, the mold sections being relatively movable in the vertical direction and selectively closeable around the core pin to form an essentially tubular injection molding cavity, the end of said molding cavity adjacent said turret defining the finished neck portions of the desired container shape, including an annular end surface;

the outer radial portion of said annular parison end surface being defined by an internal shoulder of said molding cavity when said mold sections are closed and being exposed when said mold stations are opened;

a horizontally movable carriage at the ejection station including a gripping mechanism defined by at least two arcuate sections which are radially displaceable to selectively engage and disengage at least a peripheral portion of the exposed neck portion of the molded parison carried by each said core pin, said arcuate sections defining when closed, an annular surface abuttable with said radially outer annular portion of the parison end surface;

said carriage being reciprocable between (a) a first principal position where said gripping mechanism annular surface is aligned with said radial outer portion of the parison end face and (b) a second principal position where the gripping mechanism is axially displaced relative to the core pin to strip said parison from the core pin primarily by the application of a compressive force to said outer annular portion of the parison end face;

displacement means on the carriage for selectively closing the gripping mechanism around the parison at said first principal position and for selectively opening the gripping mechanism at said second principal position to disengage the parison held therebetween;

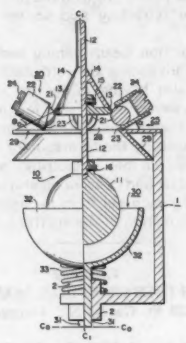
and transport means for moving the carriage between said first and second principal positions.

4,201,536

VIBRATION RESPONSIVE MECHANISM

Eiji Suzuki, 681-5, Oiso, Oiso-machi, Naka-gun, Kanagawa Pref., Japan

Filed Jan. 31, 1978, Ser. No. 873,973
Claims priority, application Japan, Feb. 19, 1977, 52-16689
Int. Cl.[2] F16K *17/36*
U.S. Cl. 431—88 **13 Claims**



1. A vibration responsive mechanism having a weight suspension rod pendulum which falls in response to the vibration of a base body to which said mechanism is mounted, said mechanism comprising:

a responsive disc secured to said rod normally and coaxially therewith,

an eccentricity variable thrust ball bearing forming a releasable suspension fulcrum for said pendulum,

said thrust ball including at least 3 support balls which contact with and bear the periphery of said responsive disc in an upward and centripetal direction upon the stationary condition of said base body at equal space and at an equal initial inclination angle θ_0 with respect to the horizontal plane, and a set of radial guide races secured to said body for moving said supporting balls in an only radial direction at an equal inclination angle α ($\geqq 0$) with respect to the horizontal plane individually, said guide races comprising a biasing means for constantly and individually biasing said supporting ball in a centripetal direction, a circular opening through which said responsive disc can pass in a vertical direction, and a guide skirt being flared from the inner periphery of a circular opening, whereby respective supporting balls individually move

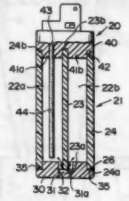
along respective radial guide races by the fact that said biasing mechanism generated component forces on respective supporting balls counter-act the changes in the component forces applied upon said contact points when the base body is subject to vibration.

4,201,537

FUEL TANK OF A DISPOSABLE CIGARETTE GAS LIGHTER

Tomio Nitta, Yokohama, Japan, assignor to Tokai Seiki Co., Ltd., Yokohama, Japan

Filed Feb. 9, 1978, Ser. No. 876,484
Int. Cl.[2] F23D *13/04*
U.S. Cl. 431—344 **13 Claims**



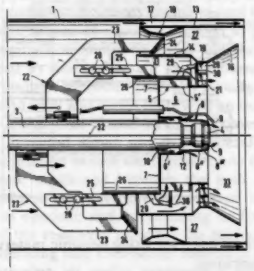
1. A cigarette gas lighter comprising an extruded, one-piece tubular tank body of uniform cross section at least in the longitudinal direction thereof having upper and lower ends and a plurality of borings partitioned by at least one partition wall and extruding in parallel from and to and between the ends in said longitudinal direction of the tank body, a holder including a lighting means attached to the upper end of the tank body, a bottom cap attached to the lower end of the tank body in a liquid tight fashion where said tank body, said holder and said bottom cap comprise three separate members, and means for providing a communicating path between said borings, said tank body being produced by cutting a continuous tubular member of uniform cross section having said plurality of borings obtained by extrusion molding of plastics, and said borings being partitioned by said partition wall and surrounded by a peripheral wall.

4,201,538

LARGE BURNERS, PARTICULARLY FOR LIQUID FUELS

Hermann Kopp, Schwendi, Fed. Rep. of Germany, assignor to Max Weishaupt GmbH, Schwendi, Fed. Rep. of Germany

Filed Dec. 22, 1977, Ser. No. 863,180
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1976, 2659089
Int. Cl.[2] F23D *15/00*
U.S. Cl. 431—351 **8 Claims**



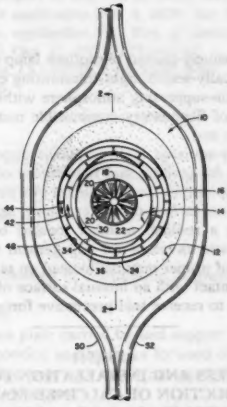
1. A burner for liquid fuels such as light, medium and heavy oil, comprising: an air supply pipe; a sleeve carrying air; a fuel supply pipe concentrically located in said air supply pipe and partially enclosed by said sleeve carrying air; spray diffuser means and a twist-producing member enclosing said fuel supply pipe upstream of said spray diffuser means; said twist-producing member comprising a fixed blower wheel and receiving combustion air from the periphery thereof, the combustion air quantity being regulatable upstream of the burner head as a function of the prevailing fuel flow; two auxiliary air supply pipes in a space between said twist-producing member and said air supply pipe; said auxiliary air supply pipes having an innermost pipe with an end cone directed towards the outside; two auxiliary twist-producing members with opposite twist direction enclosing each other and located coaxialy downstream from said first-mentioned twist-producing member enclosing the fuel supply pipe; one of said auxiliary twist-producing members being an inner member with twist direction corresponding to the twist direction of said first-mentioned twist-producing member enclosing the fuel supply pipe; said inner twist-producing member having a smallest diameter connected to an axial discharge opening of said first-mentioned twist-producing member enclosing the fuel supply pipe; the other one of said auxiliary twist-producing members being an outer member with largest diameter located between a cylindrical part of the inside air supply pipe and its outward directed end cone; and a sliding link for closing at partial load of the burner the intake to said first-mentioned outer twist-producing member enclosing the fuel supply pipe, space between said two auxiliary air supply pipes, and the intake to the outer one of said auxiliary twist-producing members; said sliding link opening at other load regions of the burner, said intake to said first mentioned twist-producing member, space between said two auxiliary air supply pipes and intake to the outer one of said auxiliary twist-producing members.

4,201,539

FLAME FORMING BURNER

Temple S. Voorheis, Atherton, Calif., assignor to Coen Company, Inc., Burlingame, Calif.

Filed Jan. 3, 1978, Ser. No. 866,314
Int. Cl.[2] F23D *13/40*
U.S. Cl. 431—354 **6 Claims**



1. Apparatus for burning fuel comprising:
means operative to supply a controlled amount of fuel along a central axis to an ignition site;
primary register means concentrically disposed about said fuel supply means, said primary register means being constrained to supply a parallel flow of oxidizing gas to said ignition site in sub-stoichiometric quantity; and
secondary register means concentrically disposed about said primary register means and having an outlet at a second-

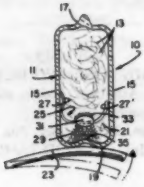
ary zone surrounding said ignition site, said secondary register means comprising an annular chamber having a first annular array of blades pitched to impart slight rotational flow in one circumferential direction and a second annular array of blades pitched to impart rotational flow in the opposite circumferential direction, said second array being disposed concentrically about and substantially in a common plane with said first array, the outlet areas of said first array and said second array being of substantially equal cross-sectional area so that counter-rotating streams of oxidizing gas can be introduced through each one of said arrays of said secondary register means at approximately equal mass and velocity from a common source providing a mix-inducing substantially uniform peripheral secondary flow while canceling out circumferential flow components for supplying a secondary flow of oxidizing gas not substantially downstream and surrounding said ignition site, said secondary flow being constrained to be in the minimum quantity to achieve complete combustion with low excess air.

4,201,540

PERCUSSIVELY IGNITED PHOTOFLASH LAMP AND METHOD OF MAKING SAME

John F. Waymouth, Marblehead; Andre C. Bouchard, Peabody; Richard A. Fowler, Ipswich, and Harold H. Hall, Jr., Marblehead, all of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 4, 1978, Ser. No. 893,223
Int. Cl.² F21K *5/02*
U.S. Cl. 431—361 **12 Claims**



1. A percussively-ignited photoflash lamp comprising:
an hermetically-sealed, light-transmitting envelope;
a combustion-supporting atmosphere within said envelope;
a quantity of filamentary combustible material within said envelope; and
percussively-actuated ignition means disposed within said envelope for igniting said filamentary combustible material in response to the application of a percussive force to the external surface of said envelope; said ignition means including a resilient member located between opposed walls of said envelope for engagement therewith, and a quantity of primer material located on said resilient member in contact with an internal surface of the wall of said envelope to receive said precussive force.

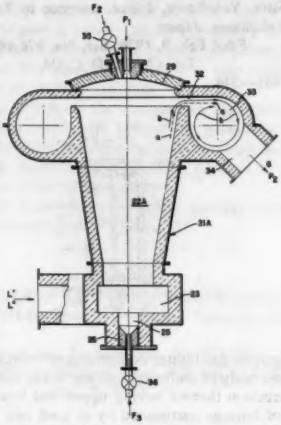
4,201,541

PROCESS AND INSTALLATION FOR THE PRODUCTION OF CALCINED MATERIAL

Fritz Schoppe, 8026 Ebenhausen, Isartal Max-Ruttger-Str. 24, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 475,874, Jun. 3, 1974, Pat. No. 4,098,871. This application Dec. 13, 1977, Ser. No. 860,186
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2657135
Int. Cl.² F27B *15/00*
U.S. Cl. 432—58 **19 Claims**

1. Calcining apparatus which comprises:
a. a reactor;
b. means for introducing a particular raw material to be calcined into said reactor;
c. means for introducing a heated gas into the reactor and for effecting a flow of said gas through said reactor to convey the raw material through the reactor and to calcine said material;
d. an outlet for the calcined material and the gas by which the calcined material is conveyed through the reactor;



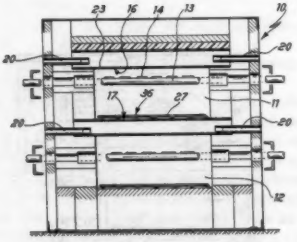
e. means for separating from the calcined particles the gas removed from the reactor therewith and for replacing said gas with one which is essentially chemically inert with respect to the calcined particles;
f. an unfired preheater for the raw material; and
g. means for circulating the gas from which the particles were removed through said preheater in heat transfer relationship with said raw material.

4,201,542

OVEN FOR FIRING CERAMIC MATERIAL OR THE LIKE

Renato Bossetti, Novara, Italy, assignor to S.I.T.I. Societa Impianti Termoelettrici Industriali (s.a.s.), Marano Ticino, Italy

Filed Jun. 21, 1978, Ser. No. 917,648
Claims priority, application Italy, Jun. 30, 1977, 25229 A/77
Int. Cl.² F27B *9/02*
U.S. Cl. 432—128 **11 Claims**



1. An improved oven for firing ceramic material or the like, said oven comprising:
at least one longitudinally extending firing chamber having a ceiling and a floor;
a plurality of rollers disposed transversely of said firing

chamber and actuated for rotation to advance material to be fired longitudinally along said chamber;

a horizontal auxiliary surface disposed within a lower part of said chamber at a position spaced from the material being fired; and

means for displacing said auxiliary surface longitudinally along said chamber in a direction opposite to the direction of travel of the material being fired.

4,201,543

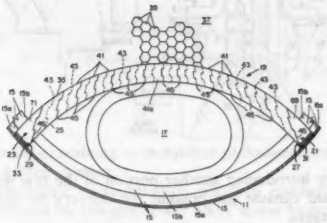
HOT BLAST STOVE BREAST WALL

Jack Hyde, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jul. 26, 1978, Ser. No. 928,244

Int. Cl.[2] C21B *9/00*

U.S. Cl. 432—217 **10 Claims**



1. In a side combustion chamber hot blast stove, used in conjunction with a blast furnace in steel manufacturing operation, a breast wall comprising a masonary refractory construction of multiple vertical courses of refractory shapes arranged in a vertical arch, said refractory shapes having means for interlocking and being interlocked, along adjoining sides, in a complementary manner such as to prevent individual movement in relation to each other, each of said refractory shapes having a characteristic reverse key form, said refractory shapes being arranged in said breast wall, said reverse key form tending to converge toward that side of the said breast wall which forms the larger arc radius of said horizontal arch, said breast wall adjoining the shell wall of said hot blast stove at the points of intersection of the arc of said shell wall with the arc of said vertical arch.

4,201,544

HIGH PRESSURE HEATER

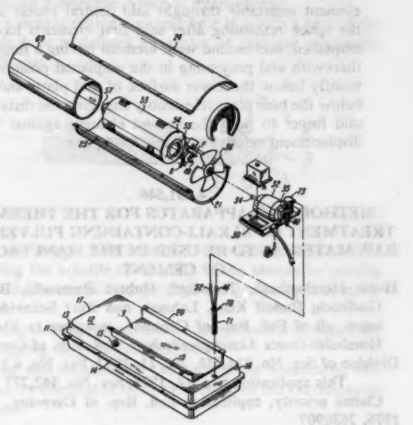
Eugene C. Briggs, and William E. Gustafson, both of Bowling Green, Ky., assignors to Keohring Company, Milwaukee, Wis.

Filed Nov. 10, 1977, Ser. No. 850,088

Int. Cl.[2] F24H *3/04*; B01D *33/34*

U.S. Cl. 432—222 **14 Claims**

1. A portable space heater comprising a combustion chamber the peripheral wall of which is defined by a tubular shell having a front end and a rear end, having regard for its orientation in use, the rear end of which is adapted to pass a fuel-air mixture for combustion in said chamber and the front end of which is capped by means forming an afterburner section for said chamber which projects generally axially of and outwardly from said shell and forms therewith an outlet from said chamber, a tubular heat shield having a generally uniform cross section mounted about and in a generally concentric closely spaced relation to said shell to have one end, constituting its rear end, positioned between the ends of said shell, relatively adjacent but spaced forwardly of said rear end thereof, and its opposite end, constituting its front end, positioned beyond but relatively adjacent the projected extremity of the means defining said afterburner section of said chamber, means for directing air under pressure to said combustion chamber and to move air the length of the passage which is defined between said shell and said shield and beyond said front end of said shell along an axial length of the inner surface of said shield projected beyond the means defining the afterburner section of said combustion chamber, the construction and arrangement being such to produce beyond said front end of said shell and about the outwardly projected portion of said means defining said afterburner section and said chamber outlet a toroidal flow of air in heat exchanging relation to products of combustion adjacent said means defining said afterburner section moving in a pattern to moderate the temperature of said means defining said afterburner section to a level eliminating a potentially dangerous hot spot and balancing the temperature of exposed portions of the heater.



4,201,545

GRATE WITH REPLACEABLE WEAR ELEMENTS

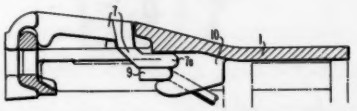
Dieter Riechert, Lohhorn 5, Hamburg 54, Fed. Rep. of Germany (2000)

Continuation-in-part of Ser. No. 887,823, Mar. 17, 1978, abandoned. This application Jun. 1, 1978, Ser. No. 911,486

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 7710129[U]; Oct. 21, 1977, 7732560[U]

Int. Cl.[2] F27D *1/12*; F26B *9/00*

U.S. Cl. 432—239 **9 Claims**



1. A grate for cooling or combustion of granular materials, comprising:

a grate support;

a one-piece base plate carried by said support in generally a horizontal position and having a forward edge area and a rearward edge area with an air passage opening through the forward edge area;

said opening being bounded along its forward and rearward edges by longitudinally spaced, transversely extending, parallel guideways integral with said plate, there being a recess in said rear guideway, centrally thereof;

a plurality of elongate rod-like first wear elements each having forward and rearward ends and opposite side edges, the forward and rearward ends each formed with guideways complementally fitting the guideways of said plate, for guided transverse translation thereby;

each said first element being insertable through said central

recess, then translatable laterally, right and left, on and along the guideways of said plate, and said guideways restraining said wear elements against upward or downward displacement relative to said base plate;

a second elongate rod-like wear element having forward and rearward ends and opposite side edges, said second wear element insertable throught said central recess and into the space remaining after said first elements have been emplaced, said second wear element having a finger fixed therewith and projecting in the emplaced position, rearwardly below the lower surface of said plate; and means below the base plate releaseably engaging the distal end of said finger to hold the second element against vertical displacement relatively to said base plate.

4,201,546

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF ALKALI-CONTAINING PULVERIZED RAW MATERIAL TO BE USED IN THE MANUFACTURE OF CEMENT

Horst Herchenbach, Troisdorf; Hubert Ramesohl, Bergisch Gladbach; Rudolf Kuhs, Lohmar, and Kurt Schneider, Cologne, all of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 814,735, Jul. 11, 1977, Pat. No. 4,126,471. This application Sep. 14, 1978, Ser. No. 942,277

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2630907

Int. Cl.[2] **F27B** *15/00, 7/02*

U.S. Cl. 432—106 **6 Claims**

1. An apparatus for the thermal treatment of alkali-containing raw material used in the manufacture of cement comprising:

a sintering furnace,

an exhaust gas conduit for hot gases leaving said sintering furnace,

a pair of vertically disposed multi-stage preheaters,

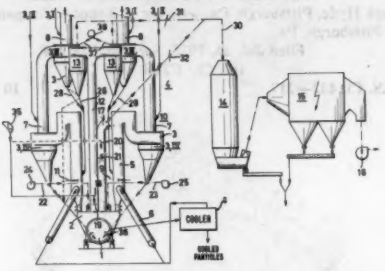
a feed pipe for introducing material into the lowermost of said multi-stage preheaters,

means for introducing a portion of the raw material into said feed pipe,

a cooler,

means for delivering substantially alkali-free exhaust gas from said cooler into said feed pipe,

a pair of heat exchangers connected to said exhaust gas conduit and receiving alkali-laden gases from said sintering furnace,



means for introducing another portion of the raw material into said exhaust gas conduit for delivery to said heat exchangers,

a dust collector,

means for delivering gases from said heat exchanger into said dust collector,

a by-pass means connecting said sintering furnace directly with said dust collector,

means for injecting still another portion of untreated raw material into said bypass means, and

means for injecting a coolant into said bypass means.

4,201,547

PROCESS FOR THE PREPARATION OF AZO DYESTUFFS ON FIBER MATERIALS CONSISTING OF, OR CONTAINING, CELLULOSE FIBERS

Erich Feess, Hofheim am Taunus; Hartmut Springer, Königstein; Paul Karacsonyi, Frankfurt am Main; Willy Gronen, Schöllkrippen, and Horst Curtius, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

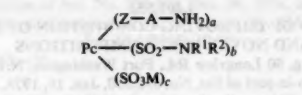
Filed Mar. 20, 1978, Ser. No. 888,030

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712367

Int. Cl.[2] D06P 1/12

U.S. Cl. 8—543 **15 Claims**

1. A process for preparing a developing dyestuff on a fiber material consisting of, or containing, cellulose fibers, which comprises contacting the fiber material with an aqueous dispersion or an alkaline solution of an amine of the formula



wherein

Pc is metal-containing or metal-free phthalocyanine,

Z is a bridge member,

A is phenylene or naphthylene which is unsubstituted or substituted by halogen, lower alkyl, lower hydroxyalkyl, lower chloroalkyl, lower alkoxy, phenoxy, carbamoyl, N-(lower alkyl)-carbamoyl, N,N-di-(lower alkyl)-carbamoyl, sulfamoyl, N-(lower alkyl)-sulfamoyl, N,N-di (lower alkyl)-sulfamoyl, lower carboalkoxy, lower alkylsulfonyl, phenyl sulfonyl, trifluoromethyl, nitro, lower alkanoylamino, benzoylamino, sulfo, carboxy, cyano or a group of the formula

$$R^3—SO_2—NR^4—$$

in which R^3 is lower alkyl, phenyl or tolyl and R^4 is hydrogen or lower alkyl,

with the proviso that the diazotizable amino group must not be linked in ortho-position to a carboxylic or sulfonic amide group containing at least one hydrogen atom on the amide nitrogen,

R^1 and R^2, which are the same or different, are hydrogen, lower alkyl, lower hydroxyalkyl, (lower alkoxy)-lower alkyl, phenyl or naphthyl, which aromatic groups are unsubstituted or substituted by methyl, methoxy, carboxy, or lower alkylsulfonyl,

or R^1 and R^2 together with the nitrogen to which they are linked are piperidyl or morpholyl,

M is a cation,

a is a number of from 1 to 4, and

b and c are numbers of from zero to 3, with the proviso that the sum of a and b and c is at most 4,

and diazotizing the amine on the fiber material and coupling the diazotized amine with an azoic coupling component capable of producing a developing dyestuff.

4,201,548

METHOD FOR DETERMINING VOLATILE SUBSTANCES IN AN AQUEOUS SOLUTION AND APPARATUS THEREFOR

Katsuki Tamaoku; Keishi Nakahara; Hideo Sumiyoshi, and Masahiro Tachibana, all of Kumamoto, Japan, assignors to Dojindo Laboratory & Co., Ltd., Kamamoto, Japan

Filed Jan. 23, 1978, Ser. No. 871,580

Claims priority, application Japan, Jan. 25, 1977, 52-6389

Int. Cl.[2] G01N 33/00, 33/16

U.S. Cl. 23—230 R **10 Claims**

1. A rapid method for detecting and determining a volatile or a volatizable substance in a sample aqueous solution or liquid comprising the steps of:

coating or impregnating a transparent film carrier with a chromogenic reagent to form a transparent color developing film-like element;

contacting said color developing film-like element with a gas permeable membrane which is hydrophobic;

placing a sample within a sample hole in which a part of the sample hole is defined by a part of said gas permeable membrane;

closing the sample hole from the surrounding atmosphere;

separating the volatile component of the sample by passing the volatile component through the gas permeable membrane;

contacting said separated volatile component with said color developing film-like element; and

detecting and determining the volatile or volatizable substance by the degree of color change of the chromogenic reagent.

4,201,549

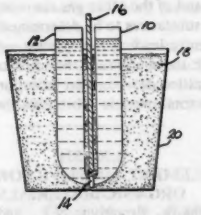
SOIL TESTING APPARATUS AND METHOD

Walter Tepe, Geisenheim, Fed. Rep. of Germany, and Adam J. J. Van Niewenhuizen, Pretoria North, South Africa, assignors to Dialytic Electrolysis Laboratorium (Proprietary) Limited, Johannesburg, South Africa

Filed Jun. 8, 1978, Ser. No. 913,640

Int. Cl.[2] G01N 33/24

U.S. Cl. 23—230 R **8 Claims**



7. A method of testing a soil sample, which comprises

(i) taking at least two samples of the soil to be tested,

(ii) placing the samples in spearate containers,

(iii) adding a nutrient medium of known content to one of the samples,

(iv) inserting two dialytic tubes in each container, the said tubes being closed at their lower ends to permit the tubes to contain liquid and open at their upper ends, the lower ends of the tubes being positioned beneath the surface of the soil, one of said tubes containing a dialysable solution containing hydrogen ions and the other of the said tubes containing a dialysable solution containing carbonate ions,

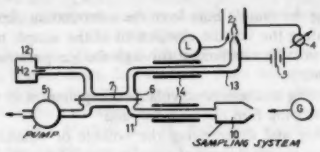
(v) leaving the containers for a predetermined time for dialysis to take place, and

(vi) thereafter analysing the solutions according to established chemical methods to establish the presence and amount of nutrient ions in the soil after removing the solutions through the open ends of the tubes for analysis.

4,201,550
PROCESS AND APPARATUS FOR THE DETERMINATION OF THE TOTAL ORGANIC SUBSTANCE CONTENT OF GASES BY A FLAME IONIZATION DETECTOR

Zoltán Noszticzius, Karinthy Frigyes ut 18/b, 1111 Budapest; Gábor Patonay, Váli utca 4, 1117 Budapest; György Pálmai, Bíró utca 17/b, 1122 Budapest; Károly Oláh, Vörösvári ut 39, 1035 Budapest; Gyula Gáspár, Gábor Áron utca 29, 1026 Budapest; György Székely, György Aladár utca 8, 1125 Budapest; Zsófia Vajta, Fenyö utca 8, 1016 Budapest; Karóly Langer, Móricz Zsigmond utca 25, 2000 Szentendre, and Ferenc Szommer, Böszörmenyi ut 34/b, 1126 Budapest, all of Hungary

Filed Dec. 19, 1977, Ser. No. 861,968
Claims priority, application Hungary, Dec. 23, 1976, CE 1114
Int. Cl.[2] G01N *27/62;* B01D *13/00*
U.S. Cl. 23—232 E 6 Claims



1. A process for the determination of the total content of organic substances in a gas to be analyzed by the flame ionization method, comprising the steps of: allowing the components of the gas to diffuse through a pore-free polymeric membrane having a permeability coefficient that exceeds 10^{-7} $Ncm^3.cm/sec.cm^2.Hgcm.$ related to the total organic substance contained in the gas; igniting another gas that contains hydrogen; leading components of the gas being analyzed into the flame of the other gas; passing the other gas along one side of the membrane at a flow rate of maximum 25 cm^3/min.; simultaneously pumping the gas being analyzed on the other side of the membrane at a volumetric flow of at least tenfold of that of the other gas; wherein the partial pressures of the gas being analyzed and of the other gas are nearly the same; diffusing the organic substances to be determined through the membrane; subsequently leading the organic substances that have diffused through the membrane, in admixture with the other gas, into an ionization detector that incorporates the flame; and determining the total organic substances therein.

4,201,551
EMBRITTLEMENT ADDITIVE FOR TREATING ORGANIC MATERIALS

Norman A. Lyshkow, Brooklyn, N.Y., and David F. Lewis, Monroe, Conn., assignors to Combustion Equipment Associates, Inc., New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 19,030
Int. Cl.[2] C10L *9/02, 5/00*
U.S. Cl. 44—1 D 29 Claims

1. A process for the treatment of the organic fraction of solid waste and cellulosic material to form a powdery material comprising treating the material with acid in the presence of an effective amount of quaternary ammonium compound to form an embrittled material which is readily reducible to finely divided form.

2. The process of claim 1, wherein the treated material is municipal solid waste.

23. A process for the treatment of the organic fraction of solid waste and cellulosic material to form a powdery material comprising treating the material with an embrittlement reagent comprising sulfuric acid and a dialkyldimethylammonium chloride, the acid present in the range between about 0.1 and 5 percent by weight and the dialkyldimethylammonium chloride present in an active concentration range is between about 0.000075 and 0.2 weight percent, the weight percent based on the dry weight of the material to be treated.

4,201,552
COAL-OIL SLURRY COMPOSITIONS

Robert L. Rowell, Amherst, and Stephen R. Vasconcellos, North Amherst, both of Mass., assignors to New England Power Service Company, Westborough, Mass.

Filed Jul. 20, 1978, Ser. No. 926,552
Int. Cl.[2] C10L *1/32*
U.S. Cl. 44—51 8 Claims

1. A coal-oil slurry which contains a cationic stabilizer having the group, $>N—CH_2—CH_2—O—$ in an amount effective to form a stable slurry containing up to about 50 weight percent coal; said stabilizer being selected from the group consisting of a tertiary amine and a quaternary ammonium salt.

4,201,553
METHOD OF IMPROVING COMBUSTION OF FUELS AND NOVEL FUEL COMPOSITIONS

Hans Osborg, 80 Longview Rd., Port Washington, N.Y. 11050

Continuation-in-part of Ser. No. 696,530, Jun. 16, 1976, Pat. No. 4,081,252. This application Mar. 8, 1978, Ser. No. 884,619
Int. Cl.[2] C10L *1/12, 7/02*
U.S. Cl. 44—52 8 Claims

1. A method of improving the combustion of ammonia, which comprises; mixing in said ammonia from 0.5 to 15 percent by weight of a hydrogen carrier; and combusting the resulting mixture; said hydrogen carrier being a compound selected from the group consisting of a boron hydride, a borohydride, a hydrazine and mixtures thereof, said compound having a molecular weight of from 8 to about 125 and a heat of formation of from about 10 kcal, to about 100 kcal. per mole; provided that the compound selected is non-reactive with the ammonia it is mixed in at ambient temperatures, does not lower the shelf like of the mixture, does not deteriorate below the ignition temperature of said mixture to release energy and at the point of ignition, releases energy and hydrogen, said mixture being non-hypergolic.

5. A method of improving the combustion of an organic amine having a molecular weight of from about 31 to about 110, which comprises; mixing in said amine from 0.5 to 15 percent by weight of a hydrogen carrier; and combusting the resulting mixture; said hydrogen carrier being a compound of hydrogen and at least one element selected from the group consisting of sodium, potassium, magnesium and boron, said compound having a molecular weight of from 8 to about 125, a heat of formation of from about 10 kcal. to about 100 kcal. per mole; provided that the compound selected is non-reactive with the amine it is mixed in at ambient temperatures, does not lower the shelf life of the mixture, does not deteriorate below the ignition temperature of said mixture to release energy and at the point of ignition, releases energy and hydrogen, said mixture being non-hypergolic.

4,201,554
FUEL ADDITIVE CONTAINING INNER QUATERNARY AMMONIUM SALT

Paul F. Vartanian, Wappingers Falls, and Joseph B. Biasotti, Lagrangeville, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 14, 1977, Ser. No. 860,544
Int. Cl.[2] C10L *1/22*
U.S. Cl. 44—62 4 Claims

1. A motor fuel composition comprising a gasoline base fuel and from 0.005 to 1 weight percent of a carburetor detergent reaction product, said carburetor detergent reaction product being obtained by preparing an initial mixture consisting of from 5 to 30 weight percent of butyl methacrylate, 50 to 81 weight percent of a higher ester of methacrylic acid consisting of between 10 and 25% by weight of C_{16}–C_{20} esters of methacrylic acid and 40 to 60 weight percent of a C_{12}–C_{15} aliphatic

ester of methacrylic acid, and from 4 to 20 weight percent of a nitrogen containing compound selected from the group consisting of 4-vinylpyridine and dimethylaminoethyl methacrylate and reacting said mixture in the presence of a polymerization catalyst and polymerization initiator to produce a first polymerization reaction product, mixing said first polymerization reaction product with an unsaturated acid selected from the group consisting of maleic acid and acrylic acid to form a second reaction mixture, and reacting said second reaction mixture at a temperature ranging from 150° to 200° C. to form said carburetor detergent reaction product.

4,201,555

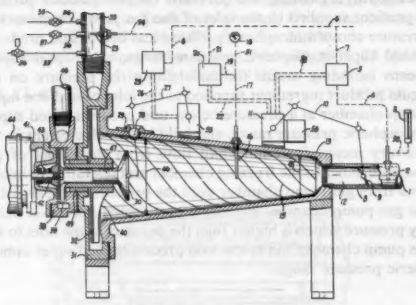
METHOD AND APPARATUS FOR DEGASIFICATION OF LIQUID BY INDUCED VORTEXING

Joseph Tkach, 6481 Glenwillow Dr., North Royalton, Ohio 44133

Continuation of Ser. No. 755,460, Dec. 30, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,184

Int. Cl.[2] B01D *19/00*

U.S. Cl. 55—20 **25 Claims**



1. In a method of degasifying liquid, the degasification proceeding to a desired level, by inducing an imbalance of saturation in favor of the vapor state of the liquid, the steps comprising:

(a) defining a body of liquid to be degasified, said body being generally circular in cross sectional shape,

(b) mechanically imparting a dynamic force to the body of liquid causing it to be transported between desired points,

(c) applying the dynamic force by a rotary driven impeller in such manner that imparts acceleration and a rotary motion to the liquid in transport, the rotary motion and acceleration extending over the entire length of the body of liquid,

(d) withdrawing the liquid in transport and replacing it with additional quantities of the liquid at rates that maintain a substantially constant flow of liquid to be degasified,

(e) variably restricting the flow of replacement liquid to an extent that the total dynamic force applied to cause the transport of the liquid exceeds the force required to transport the liquid,

(f) limiting the dynamic force so as not to overcome the inherent cohesive property of the liquid in process, and

(g) applying the excess of the total dynamic force in a manner that creates an unoccupied space within the body of liquid in transport.

24. Apparatus for degasifying liquid through an induced imbalance of saturation in favor of the vapor state of the liquid, comprising:

(a) means including a tubular passage with an inlet end and an outlet end to define a body of liquid to be degasified,

(b) means including an impeller to impart a dynamic force to the body of liquid sufficient to accelerate the liquid in its flow between the inlet end and the outlet end and transport it between desired points and to impart a rotary motion to the liquid in transport, while avoiding overcoming the inherent cohesive property of the liquid in process,

(c) means to withdraw the liquid in transport,

(d) means to replace the liquid with additional quantities at rates that maintain a substantially constant flow of liquid to be degasified, and

(e) means variably restricting the flow of liquid to the body of liquid to an extent that the total dynamic force available from the impeller means to transport the liquid exceeds the force required for transport.

4,201,556

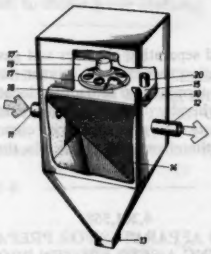
DEVICE FOR CLEANING FABRIC FILTERS

Mats A. Olsson, Björkrisvägen 15, S-161 39 Bromma, Sweden

Filed Apr. 7, 1978, Ser. No. 894,392

Int. Cl.[2] B01D *46/10*

U.S. Cl. 55—292 **5 Claims**



1. A device for cleaning a filter by vibrations caused by sound waves generated at a predetermined frequency, comprising:

(a) a first chamber within which said filter is disposed;

(b) a closed second chamber having at least one portion forming a resonator tuned to said predetermined frequency;

(c) a partition wall, one side of which forms a boundary of said at least one portion;

(d) sound wave generating means disposed in said partition wall for generating sound waves at said predetermined frequency on opposite sides of said partition wall; and

(e) means communicating said at least one portion with said first chamber.

4,201,557

PRECLEANER

Ross K. Petersen, 4701 Humboldt Ave. North, Minneapolis, Minn. 55430

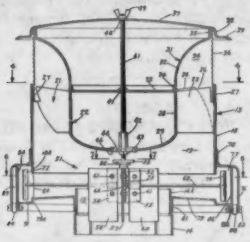
Continuation of Ser. No. 749,731, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 648,531, Jan. 12, 1976, abandoned. This application Oct. 24, 1978, Ser. No. 954,226

Int. Cl.[2] B01D *50/00*

U.S. Cl. 55—327 **47 Claims**

38. An apparatus for separating particles from gas carrying the particles comprising: a housing having a separation chamber, said housing having an inside wall surface surrounding said chamber and an adjacent gas and particle inlet opening, vane means mounted on said wall surface at the inlet opening and having a plurality of vanes, said vanes being generally similarly inclined so as to induce swirling motion of gas and particles carried thereby in a circular direction into said separation chamber whereby the particles move outwardly by centrifugal force, means attached to said housing adjacent said separation chamber and having portions spaced outwardly therefrom to define an annular discharge chamber in communication with said separation chamber, said discharge chamber having discharge openings for gas and particles, means defin-

ing a clean gas outlet passage disposed centrally of said means attached to said housing and extending therethrough communicating with said separation chamber, spinner means, means mounting said spinner means in association with the housing for free rotation in said separation chamber, said spinner means including means adjacent said gas outlet passage whereby



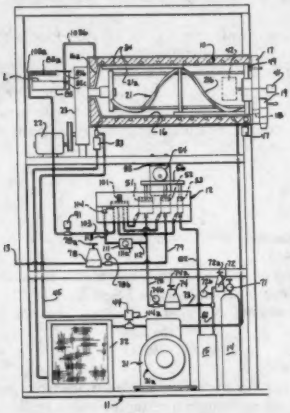
swirling air in said separation chamber and gas outlet passage solely effects rotation thereof, said spinner means further including members terminating in paddles located in said discharge chamber whereby rotation of said spinner means causes said paddles to rotate in said discharge chamber and force particles and gas therefrom and outwardly through said discharge openings.

4,201,558

METHOD AND APPARATUS FOR PREPARING AND DISPENSING A SEMI-FROZEN PRODUCT

Stephen W. Schwitters, Rockford, and Preston L. Aylesworth, Rockton, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Dec. 1, 1978, Ser. No. 965,607
Int. Cl.[2] F25C *1/18*
U.S. Cl. 62—70 **25 Claims**



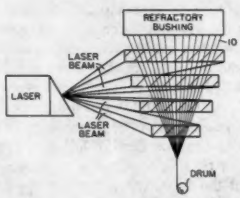
1. In an apparatus for preparing and dispensing a semi-frozen food product containing liquid and gaseous product ingredients comprising, an enclosed freezing chamber adapted to contain liquid and gaseous product ingredients under super-atmospheric pressure and having a dispensing outlet, means in the freezing chamber for stirring the liquid and gaseous product ingredients, and refrigerating means for refrigerating the freezing chamber sufficient to freeze a quantity of the mixed gaseous and liquid product ingredients in the freezing chamber, a volumetric gas pump means including a gas pump chamber having an inlet and an outlet and a displacement means operable when driven to pump gas at a preselected rate from the inlet to the outlet, volumetric liquid pump means including at least one liquid pump chamber having an inlet and an outlet and a displacement means operable when driven to pump liquid at a preselected rate from the inlet to the outlet, gas supply means for connecting the inlet of the gas pump chamber to a source of pressurized gas product ingredient, liquid product ingredient supply means for connecting the inlet of said one liquid pump chamber to a source of liquid product ingredient, delivery means for connecting the outlets of said gas and liquid pump chambers to said freezing chamber, motor operated drive means operative when driven to drive the displacement means in the gas and liquid pump means to pump gaseous product ingredient and liquid product ingredient in predetermined proportions to the freezing chamber in opposition to the pressure in said freezing chamber, control means for controlling operation of the motor operated drive means to start the same when the pressure in the freezing chamber is below a predetermined super-atmospheric pressure range and to stop the same when the pressure in the freezing chamber is above said predetermined super-atmospheric pressure range, the improvement comprising said gas supply means including means for regulating the pressure on the gaseous product ingredient supplied to the inlet of the gas pump chamber to a pressure above atmospheric pressure and below said predetermined super-atmospheric pressure range, said liquid supply means including means for maintaining the pressure on the liquid product ingredient supplied to the inlet of said one liquid pump chamber at a pressure below said predetermined super-atmospheric pressure range, and hold-back valve means in the delivery means for controlling flow from the outlet of gas pump chamber to the freezing chamber and operative to inhibit flow from gas pump chamber until the pressure at the outlet of the gas pump chamber exceeds a preselected minimum delivery pressure which is higher than the pressure at the inlet to the gas pump chamber and below said predetermined super-atmospheric pressure range.

4,201,559

METHOD OF PRODUCING A GLASS-CERAMIC

Hermann L. Rittler, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,506
Int. Cl.[2] C03B *37/00, 32/00;* C08L *91/00*
U.S. Cl. 65—2 **7 Claims**



1. In a method for converting a glass body having at least one dimension less than about 250 microns to a glass-ceramic body having a fine-grained polycrystalline phase generally consisting in the steps of:

(a) melting a glass-forming batch of a desired composition;

(b) simultaneously cooling said melt to a temperature at least within the transformation range thereof and shaping a glass body therefrom; and then

(c) heat treating said glass body within a range of temperatures for a time sufficient to cause crystallization in situ of a fine-grained polycrystalline phase therein;

the improvement which consists in said heat treatment of step (c) consisting of a plurality of heating and cooling cycles wherein each cycle consists of heating said body to a temperature within said glass crystallization range and

thereafter cooling said body to a temperature below that range.

5. A method for producing a glass-ceramic body having at least one dimension less than about 250 microns and containing a fine-grained polycrystalline phase which consists in the steps of:

(a) melting a glass-forming batch of a desired composition;

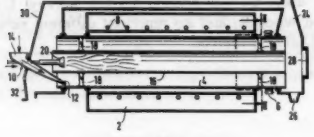
(b) simultaneously cooling said melt to a temperature at least within the transformation range thereof and shaping a glass body therefrom; and thereafter

(c) intermittently heating and cooling said glass body by subjecting said glass body to a plurality of heating and cooling cycles, each cycle consisting of heating said body to a temperature within a range wherein crystallization in situ takes place and then cooling said body to a temperature below that range, for a time sufficient to cause crystallization in situ of fine-grained polycrystalline phase therein.

4,201,560
MANUFACTURE OF SPHERICAL BALLS

Jean Dewitte, Boulogne, and Pierre Aymard, Paris, both of France, assignors to Truth Incorporated, Owatonna, Minn.

Filed Mar. 26, 1979, Ser. No. 24,090
Claims priority, application France, Mar. 31, 1978, 78 09544
Int. Cl.[2] C03B *19/10*
U.S. Cl. 65—21 11 Claims



1. Process of making balls from particulate vitreous material comprising:

(a) mixing carbon in a free state and a substantial portion of a carbonated salt, said carbonated salt capable of decomposing under heat in the presence of carbon at a temperature, for said particulate vitreous material, corresponding to a viscosity of from about 10^6 to about $10^{3.5}$ poises, and

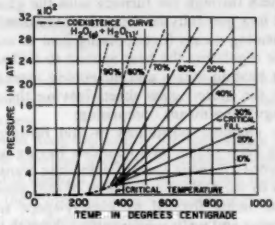
(b) both mixing and agitating both said particulate vitreous material and mixture of (a) at said temperature whereby said particulate vitreous material takes a spherical shape by action of surface tension.

4,201,561
METHOD FOR HYDRATING SILICATE GLASSES

Joseph E. Pierson, and Walter H. Tarcza, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 445,454, Feb. 25, 1974, abandoned. This application Aug. 8, 1977, Ser. No. 822,877
Int. Cl.[2] C03C *23/00*
U.S. Cl. 65—30 R 4 Claims

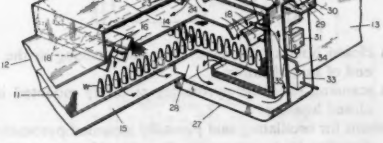
1. A single step method for making a glass body exhibiting thermoplastic properties which comprises subjecting an anhydrous glass body having a thickness dimension no greater than 15 mm. consisting essentially, in mole percent on the oxide basis, of about 3–25% Na_2O and/or K_2O and 50–95% SiO_2, the sum of those components constituting at least 55% of the total composition, to a H_2O-containing gaseous environment having a relative humidity of at least 5%, but less than 50%, at a temperature in excess of 225° C. for a period of time sufficient to develop at least a surface portion having about 1–12% by weight of water absorbed therein effective to impart thermoplastic properties and good chemical properties thereto which does not give rise to foaming and cracking.



4,201,562
METHOD FOR COATING GLASSWARE

William E. Hofmann, and Alton W. Long, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 763,768, Jan. 31, 1977, Pat. No. 4,150,964. This application Aug. 23, 1978, Ser. No. 936,287
Int. Cl.[2] C03C *17/28*
U.S. Cl. 65—60 B 6 Claims



1. The method of applying a lubricious coating to glass containers in the equalizing cooling section of an annealing lehr comprising the steps of:

drawing ambient air from outside the lehr;

circulating said air in a direction that is generally normal to the horizontal plane of the lehr mat, so that the air impinges on the containers on the lehr mat;

generating a mist of an organic, non-metallic coating material selected from the group consisting of polyolefins, fatty acids and their derivatives; and

introducing said mist into the circulating air in advance of its impingement on said containers.

4,201,563
POSITION SELECTABLE GLASS SURFACE TEMPERATURE SCANNER

Jack A. Bricker, Tarentum, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 5, 1978, Ser. No. 912,666
Int. Cl.[2] C03B *29/04*
U.S. Cl. 65—162 6 Claims

1. Apparatus for heating a series of glass sheets moving along a longitudinal path and monitoring and regulating the temperature thereof at a plurality of positions spaced from one another and aligned in a direction transverse to the direction of movement of said sheets so as to regulate the temperature at each of said positions to provide an average temperature at each of said positions substantially the same and produce a

substantially zero temperature profile across said sheets, said apparatus comprising:

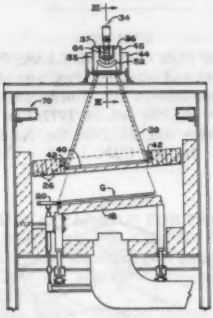
a furnace enclosure formed by refractory walls,

means for conveying a series of glass sheets along a longitudinal path through the furnace with the glass sheets supported in a generally horizontal orientation,

radiant heating means for supplying heat to said sheets,

means for regulating the heat applied to said sheets by said radiant heating means and quenching means designed to temper the heated glass sheets leaving the furnace, said heat regulating means comprising;

a narrow chamber positioned in said furnace above said moving glass sheets, said chamber having an opening in the lower-most edge thereof extending transversely with respect to the path of movement of said glass sheets, said chamber being formed by closely-space sidewalls and converging end walls which extend through the top of the furnace to a location thereabove and terminate in an opening in the uppermost end of said chamber;



a closed housing mounted over said opening in the upper end of said chamber,

a scanning radiation pyrometer pivotally mounted in said closed housing,

means for oscillating said pivotally mounted pyrometer in a direction transverse to the direction of movement of said sheets,

means to record the pyrometer temperature readings at a plurality of spaced positions as said pyrometer oscilates in a direction transverse to the direction of movement of said sheets,

means to regulate said heating means to maintain the temperature at each of the points scanned substantially the same so as to produce substantially a zero temperature profile across said sheets, and

means for introducing air at a positive pressure into said housing and said chamber sufficient to prevent the flow of furnace gas from said furnace enclosure into said chamber and said housing.

4,201,564

ORGANIC FERTILIZER

Gabriel P. Kauzal, P.O. Box 1, Potts Point, Sydney, Australia (2011)

Filed Nov. 15, 1977, Ser. No. 851,742
Int. Cl.[2] C05B *17/00*; C05F *3/00*
U.S. Cl. 71—20 **7 Claims**

1. A method for preparing organic fertilizer containing sufficient amounts of potassium, nitrogen and phosphorous to stimulate and promote the growth of plant life consisting essentially of the steps of substantially completely digesting organic material of animal origin with an acidic aqueous solution of an enzyme, substantially neutralizing the digested product with alkaline material, admixing the neutralized, digested product with a preservative against decomposition thereof and adding thereto sufficient quantities of a member selected from the group consisting of phosphates, sulfates, potassium, and mixtures thereof to provide the requisite amounts of plant growth stimulants.

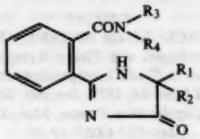
4,201,565

IMIDAZOLINYL BENZAMIDES AS PLANT GROWTH REGULANTS

Thomas D. O'Neal, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 9, 1978, Ser. No. 868,090
Int. Cl.[2] A01N *5/00*
U.S. Cl. 71—76 **10 Claims**

1. A method for reducing the relative stem growth of plants comprising: applying to said plants a plant growth regulating amount of a compound having the formula:



wherein R_1 is alkyl C_1–C_4; R_2 is alkyl C_1–C_6, cycloalkyl C_3–C_6, alkenyl C_2–C_4, phenyl, halophenyl or benzyl; and when R_1 and R_2 are taken together with the carbon to which they are attached they may form cycloalkyl C_3–C_6 optionally substituted with methyl; R_3 and R_4 each individually represent hydrogen, alkyl C_1–C_4, alkenyl C_3–C_5, alkynyl C_3–C_5, or benzyl; and when R_1 and R_2 represent different substituents, the optical isomers thereof.

4,201,566

METHOD OF INCREASING EXTRACTABLE OLEORESINOUS AND TALL OIL MATERIAL FROM PINE WOOD

Claud L. Brown, Rte. 2, 98 Hodges Mill Rd., Watkinsville, Ga. 30677

Filed Aug. 4, 1978, Ser. No. 931,169
Int. Cl.[2] A01N *5/00*
U.S. Cl. 71—92 **12 Claims**

1. Method of chemically increasing the amount of extractable oleoresinous material, lipids and tall oils from living portions of pine trees comprising the steps of:

treating severed portions of living pine wood with a dilute solution of a substituted bipyridylium salt such that said solution penetrates said severed portions to reach living cells of said severed portions; and

aerobically storing said treated wood for a period sufficient to permit the amount of oleoresinous material, lipids and tall oils to increase therein.

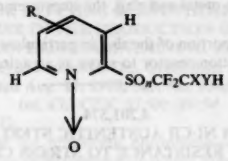
4,201,567

HERBICIDAL PYRIDINE, 1-OXIDES

Kyu T. Lee, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 19, 1979, Ser. No. 4,918
Int. Cl.[2] C07D *213/26*; A01N *9/22*
U.S. Cl. 71—94 **18 Claims**

1. A compound of the formula



wherein

R is hydrogen, fluorine, bromine, chlorine, alkyl of 1 to 4 carbon atoms, CF_3, OCH_3 or OCF_2CXYH;

X is fluorine, bromine or chlorine;

Y is fluorine, bromine or chlorine; and n is 0, 1 or 2, provided that when n is 0 or 2, then R is hydrogen or methyl, X is fluorine or chlorine and Y is fluorine.

13. A method for controlling weeds which comprises applying to said weeds a herbicidally effective amount of a compound of claim 1.

4,201,568

2-(1-ETHYLPROPYLAMINO)-3-CYANO-4-METHOXYMETHYL-5-NITRO-6-METHYLPYRIDINE

Benjamin A. Belkind, Skokie, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 24,925

Int. Cl.[2] A01N *9/22;* **C07D** *213/57*

U.S. Cl. 71—94 **3 Claims**

1. The compound 2-(1-ethylpropylamino)-3-cyano-4-methoxymethyl-5-nitro-6-methylpyridine.

3. A method of controlling weeds which comprises contacting the weed with a herbicidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to weeds, the compound of claim 1.

4,201,569

2,3-DISUBSTITUTED ARALKYLAMINOACRYLONITRILES AND USE AS HERBICIDES

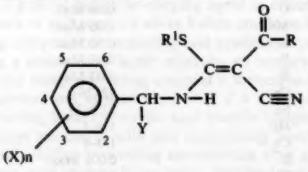
Loren W. Hedrich, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 838,523, Oct. 3, 1977, Pat. No. 4,154,599. This application Feb. 21, 1979, Ser. No. 13,779

Int. Cl.[2] A01N *9/20;* **C07C** *121/78*

U.S. Cl. 71—98 **29 Claims**

1. A compound of the formula



in which R is C_1 to C_4 straight chain saturated or unsaturated alkoxy, amino, dimethylamino or straight chain C_1 to C_3 monoalkylamino, R^1 is methyl or ethyl, X is nitro, methoxy, methyl, ethyl, Br, Cl, or F in which n is an integer from 0 to 2, at least one of the 2 and 6 positions is unsubstituted and Y is H or a C_1 to C_5 branched or unbranched, saturated or unsaturated alkyl or cycloalkyl substitutent group.

4,201,570

PROCESS FOR QUENCHING OF FINE PARTICULATES

Steven J. Fitch, Baltimore, and Charles A. Tanner, Severna Park, both of Md., assignors to SCM Corporation, Cleveland, Ohio

Filed Dec. 10, 1976, Ser. No. 749,235

Int. Cl.[2] C22B *1/14*

U.S. Cl. 75—1 T **8 Claims**

1. A process for quenching and agglomerating a mass of fine particulate material containing hydrolyzable metal halides which comprises:

hydrating said mass sufficiently for suppressing dusting and fuming at ambient transport conditions without leaving appreciable aqueous liquid in the resulting hydrated mass;

subjecting the hydrating mass to agglomeration as it generates heat and evolves vapor;

withdrawing said vapor; and

collecting as product the residual agglomerates.

2. The process of claim 1 wherein the mass of fine particulates is obtained from chlorination of titaniferous materials in the presence of carbon.

4,201,571

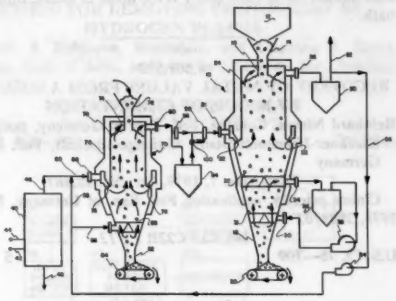
METHOD FOR THE DIRECT REDUCTION OF IRON AND PRODUCTION OF FUEL GAS USING GAS FROM COAL

John C. Scarlett, Toledo, Ohio, and Donald Beggs, Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Continuation-in-part of Ser. No. 933,690, Aug. 15, 1978. This application Dec. 7, 1978, Ser. No. 967,348

Int. Cl.[2] C21B *13/02*

U.S. Cl. 75—35 **6 Claims**



1. A method for producing fuel gas and a metallized iron product comprising:

a. gasifying solid fossil fuel to produce a hot gasifier gas;

b. tempering said hot gasifier gas with cool cleaned spent top gas from a direct reduction furnace to form a hot gas mixture including oxidants CO_2 and H_2O;

c. reacting said hot gas mixture with carbon to upgrade the quality of the mixture by converting a portion of the oxidants CO_2 and H_2O to reductants CO and H_2, reacting said mixture with a sulfur acceptor to desulfurize the mixture, and forming a hot reducing gas;

d. cooling a portion of said hot reducing gas;

e. mixing said cooled portion with the hot portion of said reducing gas to form a tempered hot reducing gas in response to a temperature measurement taken at the reducing gas inlet of a direct reduction furnace;

f. introducing the tempered hot reducing gas into a direct reduction furnace, reducing the iron oxide therein to a highly metallized product, and forming a carbon dioxide containing top gas;

g. removing said top gas from the direct reduction furnace and cooling and scrubbing said top gas;

h. removing the major portion of said cooled, scrubbed top gas for use as a fuel gas;

i. and utilizing a minor portion of said cooled, scrubbed top gas as a tempering gas.

4,201,572

METHOD FOR INCREASING THE SCRAP MELTING CAPABILITY OF BOTTOM BLOWN PROCESSES

Frank Slamar, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1978, Ser. No. 930,441

Int. Cl.[2] C21C *5/34*

U.S. Cl. 75—60 **10 Claims**

1. A non-rotary furnace process for the manufacture of refined molten metals from a charge comprising carbon-containing molten metal and solid metal scrap, wherein at least one primary stream of free-oxygen containing refining gas is injected into the vessel below the surface of a molten metal bath to be refined therein, and at least one secondary stream of a free-oxygen containing gas is injected into the vessel above the bath surface so as to combust within the vessel at least a portion of the carbon monoxide evolved from the bath during the refining thereof and to impart to the bath thermal energy released by such combustion,

the improvement for enhancing the scrap-melting capability of the process within the operating temperature tolerance range of the refractory lining which comprises conducting the refining and scrap melting in a bath having a surface area, A, greater than that defined by the equation:

$$A = 9 + 0.11T$$

where A is the top surface area, in square meters, of the quiescent molten metal bath, and T is the mass, in metric tons, of the bath.

4,201,573

RECOVERY OF METAL VALUES FROM A SOLUTION BY MEANS OF CEMENTATION

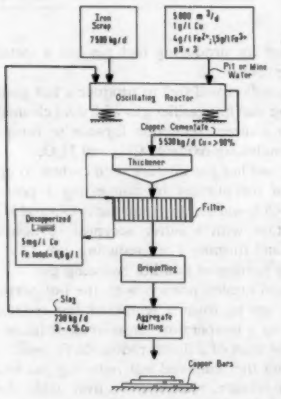
Reinhard Nissen, Cologne, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,187

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809702

Int. Cl.[2] C22B *15/12*

U.S. Cl. 75—109 **5 Claims**



1. In a method for the recovery of metal values by cementation wherein the metal to be recovered is precipitated by means of a cementation medium in an oscillating reactor, the resulting cementate is converted by pyrometallurgical methods into molten metal and slag, the improvement which comprises:

conveying a portion of the slag in particulate form back into said oscillation reactor to serve as an agitation medium.

4,201,574

LOW CARBON NI-CR AUSTENITIC STEEL HAVING AN IMPROVED RESISTANCE TO STRESS CORROSION CRACKING

Masamichi Kowaka, and Hisao Fujikawa, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Feb. 21, 1978, Ser. No. 879,388

Claims priority, application Japan, Mar. 2, 1977, 52-23180

The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.

Int. Cl.[2] C22C *38/02, 38/42, 38/46*

U.S. Cl. 75—122 **8 Claims**

1. A low carbon Ni—Cr austenitic steel having an improved resistance to stress corrosion cracking, which consists essentially of less than 0.029% by weight of carbon, 1.5 to 4.0% by weight of silicon, 0.1 to 3.0% by weight of manganese, 23 to 45% by weight of nickel, 20 to 35% by weight of chromium, 0.5 to 4.0% by weight of vanadium, and at least one element selected from the group consisting of titanium in an amount of at least 5 times the carbon content and up to 1% by weight of the total composition, niobium in an amount of at least 7 times the carbon content and up to 1% by weight of the total composition, zirconium in an amount of at least 7 times the carbon content and up to 1% by weight of the total composition, tantalum in an amount of at least 7 times the carbon content and up to 2% by weight of the total composition and tungsten in an amount of at least 5 times the carbon content and up to 2% by weight of the total composition, the total amount of any combination of the group consisting of titanium, niobium, zirconium, tantalum and tungsten being in the range of at least 5 times the carbon content and up to 2% by weight of the total composition, with the balance being essentially iron.

4,201,575

AUSTENITIC STAINLESS CORROSION-RESISTANT ALLOY

Michael Henthorne, Los Altos, Calif., and Terry DeBold, Reading, Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Filed May 18, 1979, Ser. No. 40,179

Int. Cl.[2] C22C *30/00*

U.S. Cl. 75—122 **19 Claims**

1. An austenitic stainless corrosion resistant alloy having good resistance to pitting and crevice corrosion in chloride bearing media combined with resistance to corrosion in oxidizing media consisting essentially in weight percent of about

C	0.06 Max.
Mn	1.00 Max.
Si	0.50 Max.
P	0.03 Max.
S	0.03 Max.
Cr	22–26
Ni	32.5–37
Mo	5–6.7
Cu	1.0–4
B	0.005 Max.
Nb	1 Max.
N	0.4 Max.
Ce + La	0.4 Max.

the amount of nitrogen being not greater than that which can be retained in solution, the amount of cerium plus lanthanum being the amount added as misch metal, and the balance essentially iron.

4,201,576
METHOD FOR REFINING FERROPHOSPHORUS FOR USE IN THE PRODUCTION OF PHOSPHORUS-CONTAINING STEEL

George D. Haley, 12 Imperial Dr., Greenville, Pa. 16125

Filed Aug. 17, 1978, Ser. No. 934,665
Int. Cl.[2] C22C *33/00, 39/54*
U.S. Cl. 75—132 6 Claims

1. A method for producing phosphorus-containing steels from high silicon ferrophosphorus which comprises pulverizing ferrophosphorus having an elemental silicon content in excess of 1 percent by weight to enable said pulverized ferrophosphorus to pass a ¼ inch sieve, mixing a liquid oxidizing agent with said pulverized ferrophosphorus whereby substantially all of said elemental silicon will be oxidized to silica, drying the resulting product, and adding said resulting product with the silicon oxidized to silica to molten steel to phosphorize the same.

4,201,577
CERAMIC SUBSTRATE ALLOY

Clyde E. Ingersoll, Tonawanda, and Dwarika P. Agarwall, Williamsville, both of N.Y., assignors to Williams Gold Refining Company Incorporated, Buffalo, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,563
Int. Cl.[2] C22C *5/02*
U.S. Cl. 75—134 N 7 Claims

1. An alloy suitable to have porcelain fired thereon consisting essentially of the following constituents in the indicated percentages by weight: silver 0–11.0%, aluminum 0–1.0%, gold 31.8–63.16%, boron 0–0.13%, calcium 0–0.12%, copper 0–5.0%, iron 0–0.75%, gallium 0–5.0%, indium 0.5–10.55%, lithium 0–0.04%, nickel 0–2.0%, palladium 28.96–57.97%, rhenium 0.025–0.25%, ruthenium 0.025–1.8%, silicon 0–0.0125%, tin 0–7.5%, titanium 0–0.06%, vanadium 0–0.12% and zinc 0–1.98%, with the proviso that both said rhenium and said ruthenium are present in the alloy composition, and the total of said rhenium and said ruthenium is at least 0.05% and the total of said gallium, indium and tin is at least 3.5%.

4,201,578
BLOCKED COMPETING DEVELOPERS FOR COLOR TRANSFER

Thomas I. Abbott, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 848,061, Nov. 3, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 955,831
Int. Cl.[2] G03C *5/54, 1/40, 7/00, 17/06*
U.S. Cl. 430—222 25 Claims

17. In a process for producing a photographic transfer image in color from an imagewise-exposed photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material, said process comprising treating said element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of said exposed silver halide emulsion layer, said processing composition contacting said emulsion layer prior to contacting a neutralizing layer; whereby an imagewise distribution of dye image-providing material is formed as a function of development and at least a portion of it diffuses to a dye image-receiving layer to provide said transfer image, whereby a timing layer associated with said neutralizing layer is permeated by said alkaline processing composition after a predetermined time, said timing layer being disposed between said neutralizing layer and said photosensitive silver halide emulsion layer so that said processing composition must first permeate said timing layer before contacting said neutralizing layer, said neutralizing layer being located on the side of said timing layer which is farthest from said dye image-receiving layer; whereby said alkaline processing composition is neutralized by means of said neutralizing layer associated with said photographic element after said predetermined time; the improvement wherein a hydroquinone ester is employed either in said timing layer or in a layer adjacent thereto, said adjacent layer being so located with respect to said timing layer that said processing composition must first permeate said timing layer before contacting said adjacent layer, said hydroquinone ester having the following formula:

wherein:

G is hydrogen, COR or SO_2R;

G^1 is COR or SO_2R;

R is an alkyl group having from 1 to about 20 carbon atoms or an aryl group having from 6 to about 12 carbon atoms; and

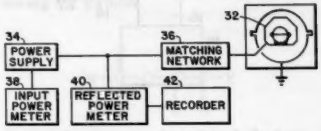
Z is hydrogen, an alkyl group having from 1 to about 6 carbon atoms, an alkoxy group having from 1 to about 6 carbon atoms, or an aryl group having from about 6 to about 8 carbon atoms;

and wherein said timing layer has an activation energy of penetration of the layer by an aqueous alkaline solution of greater than 18 kcal/mole.

4,201,579
METHOD FOR REMOVING PHOTORESIST BY HYDROGEN PLASMA

Frederick J. Robinson, Scottsdale, and Clarence J. Tracy, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 5, 1978, Ser. No. 912,615
Int. Cl.[2] G03C *5/00;* C23F *1/02*
U.S. Cl. 430—323 7 Claims



1. A method for removing a photoresist coating from a substrate which comprises the steps of: placing said substrate coated with said photoresist in a metal holder; placing said metal holder and said substrate in a plasma reactor, said metal holder in electrical contact with an electrode of said plasma reactor; heating said substrate; injecting a hydrogen bearing gas into said plasma reactor; applying power to said plasma reactor to create a plasma therein, a portion of said power being reflected from said reactor, said plasma reacting with and removing said photoresist from said substrate, and monitoring said reflected power from said reactor to detect the removing of the photoresist.

4,201,580
LITHOGRAPHIC FABRICATION WITH TREATMENT OF "LIVING POLYMER"

Eugene D. Feit, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 24, 1978, Ser. No. 926,877
Int. Cl.[2] G03C *5/00, 1/68*
U.S. Cl. 430—319 11 Claims

1. Process for fabrication of an article comprising an opera-

tion during which the article undergoing fabrication comprises an article surface and an overlying actinic processing layer, said processing layer consisting essentially of polymeric material including the steps of:

(1) selectively exposing portions of the said processing layer to actinic radiation to define a pattern whereby ease of removal of the said portions of the processing layer by a developing agent is changed;

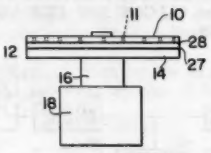
(2) treating the said processing layer with said developing agent to selectively remove material to produce a patterned processing layer;

(3) treating the article undergoing fabrication with an altering agent which preferentially alters regions of the said article surface corresponding with removed portions of the patterened processing layer, CHARACTERIZED IN THAT the said polymeric material is produced by treatment of a precursor polymeric material having a molecular weight distribution M_w/M_n (said weight average molecular weight/number average molecular weight) of a maximum numerical value of 1.8, said precursor polymeric material having been produced by an anionic "living" polymerization, said treatment being the addition of functional groups to the said precursor polymeric material which imparts actinic properties which results in the said polymeric material, wherein the said polymeric material also has a molecular weight distribution M_w/M_n of a maximum numerical value of 1.8.

4,201,581
METHOD OF PROVIDING CLOSE CONTACT FOR CONTACT PRINTING

Harold T. Thomas, Rochester; Dennis G. Howe, Fairport, and James K. Lee, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 13, 1978, Ser. No. 885,922
Int. Cl.[2] G03C *5/06, 5/04*
U.S. Cl. 430—396 **18 Claims**



1. A method of obtaining close contact between a master device and a replicate device, said method comprising the steps of:

forming a master-replicate combination by superposing the master and replicate devices with a liquid therebetween; and

spinning the master-replicate combination to obtain a layer of liquid between substantially the entire adjacent surfaces of the master and replicate devices, said liquid layer having a thickness less than about 1 micron.

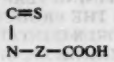
4,201,582
PHOTOTHERMOGRAPHIC AND THERMOGRAPHIC ELEMENT, COMPOSITION AND PROCESS

Richard L. White, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 466,331, May 2, 1974, abandoned. This application Dec. 22, 1975, Ser. No. 643,462
Int. Cl.[2] G03C *5/24, 1/02*
U.S. Cl. 430—351 **23 Claims**

18. In a thermographic element comprising a support having thereon

(a) a silver salt of a heterocyclic thione, said heterocyclic thione being represented by the formula:



wherein R represents atoms completing a 5-member heterocyclic nucleus, Z is alkylene containing 1 to 30 carbon atoms in association with

(b) an organic reducing agent for said silver salt, and

(c) a toner

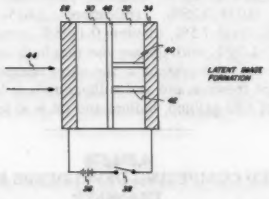
the improvement wherein said toner is selected from the group consisting of 3-mercapto-1H-1,2,4-triazole, 3-imino-5-thiourazole, 4-methyl-3,5-dithiourazole, 4-phenyl-3,5-dithiourazole, 4-(p-methoxyphenyl)-3,5-dithiourazole, 2,4-dimercaptopyrimidine, 8-mercaptopurine and 2,6-dimercaptopurine toners.

23. A process of developing an image in a thermographic element as defined in claim 18 comprising imagewise heating said thermographic element to a temperature of about 100° C. to about 180° C.

4,201,583
ELECTRICALLY ACTIVATED RECORDING MATERIAL AND PROCESS

Raymond F. Reithel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 858,780, Dec. 8, 1977. This application Nov. 17, 1978, Ser. No. 961,819
Int. Cl.[2] G03C *5/00*
U.S. Cl. 430—97 **16 Claims**



1. A dry electrically activated recording process for producing a developed, silver image in a charge-sensitive recording element having an ohmic resistivity of at least about 1×10^{10} ohm-cm and containing at least one electrically activated recording, image-forming combination comprising

(i) an organic, silver salt oxidizing agent with

(ii) an organic reducing agent, and

(iii) a photographic speed-increasing concentration of an organic photographic speed-increasing electron acceptor which is a compound selected from the group consisting of

(I) anthraquinone, and substituted anthraquinone electron acceptors,

(II) phthalaldehyde,

(III) tetrachlorophthalonitrile,

(IV) tetrachlorophthalic anhydride,

(V) p-chloranil,

(VI) α,α,α,α′,α′,α′-hexachloro-p-xylene,

(VII) cobaltihexamine trifluoroacetate, and combinations thereof,

and a binder; said process comprising the steps of

(A) imagewise applying an electric potential across said recording layer of a magnitude and for a sufficient time to produce a developable latent image in said layer corresponding to said image (I); and

(B) heating said recording layer substantially uniformly at a temperature and for a time sufficient to develop said latent image.

4,201,584

SILVER HALIDE ELEMENTS CONTAINING YELLOW FORMING COLOR COUPLERS FOR SILVER HALIDE PHOTOGRAPHY

Marcel J. Monbaliu, Mortsel, and Raphael K. Van Poucke, Berchem, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Sep. 19, 1978, Ser. No. 943,863
Claims priority, application United Kingdom, Oct. 7, 1977, 41834/77
Int. Cl.² G03C 7/00, 1/40
U.S. Cl. 430—389 8 Claims

1. A method of producing a yellow coloured photographic image in a photographic light-sensitive silver halide material by image-wise exposure of the material and development thereof by means of an aromatic primary amino colour developing agent in the presence of an acylacetanilide compound suitable for use as yellow-forming colour coupler in silver halide colour photography characterized in that the acylacetanilide is one whereof the phenyl nucleus of the anilide group of the molecule carries oxyhydrocarbon groups in the 2-, 4- and 5-positions with respect to the amido group.

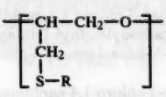
4,201,585

PHOTOGRAPHIC BLEACH COMPOSITIONS CONTAINING BLEACH-ACCELERATING COMPOUNDS

Robert J. Pollet, Vremde; Camille A. Vandeputte, Mortsel; Francis J. Sels, Kontich, and George F. van Veelen, Mortsel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Oct. 17, 1978, Ser. No. 952,144
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748430
Int. Cl.² G03C 5/32, 7/00
U.S. Cl. 430—376 10 Claims

1. A method of processing an image-wise exposed light-sensitive photographic material with at least one silver halide emulsion layer comprising the steps of treating the material with a developing solution, and treating the thus developed material with a photographic bleach containing a silver-oxidizing agent wherein the said photographic bleach and/or an acidic stop bath used between the said developing solution and the said bleach comprise(s) a polyoxyethylene compound, which comprises at least 20 mol % recurring oxyethylene units carrying side-chains with at least one thioether group corresponding to the formula:



wherein R represents a member of the group consisting of an aliphatic, aromatic and a heterocyclic group, which may carry one or more subsituents.

4,201,586

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kiyotaka Hori, and Shigeru Nagatomo, both of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Continuation of Ser. No. 587,590, Jun. 16, 1975, abandoned. This application Nov. 4, 1977, Ser. No. 848,630
Claims priority, application Japan, Jun. 17, 1974, 49/68945
Int. Cl.² G03C 1/76
U.S. Cl. 430—621 9 Claims

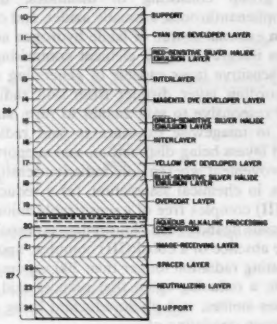
1. A photographic light-sensitive material containing an uppermost layer consisting essentially of acid-processed gelatin and a surface active organic fluoro-compound, wherein said organic fluoro-compound contains in the molecule thereof at least three fluorine atoms and a group in which at least three carbon atoms combine to form carbon-carbon bonds.

4,201,587

GRAFT COPOLYMERS AS DIFFUSION CONTROL LAYERS IN PHOTOGRAPHIC DIFFUSION TRANSFER PRODUCTS

Stanley F. Bedell, Andover; Charles I. Sullivan, Melrose, and Lloyd D. Taylor, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 15, 1978, Ser. No. 942,489
Int. Cl.² G03C 1/76, 1/40, 1/48, 5/54
U.S. Cl. 430—224 59 Claims

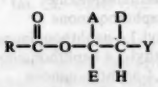


17. A photosensitive element for use in diffusion transfer photographic processes comprising:

a support layer;

at least two selectively sensitized silver halide emulsion layers coated upon said support, each emulsion layer having associated therewith a processing composition soluble and diffusible image-forming material; and

an interlayer positioned between at least two of said silver halide emulsion layers, which interlayer comprises a graft copolymer comprising an organic polymeric backbone having grafted thereon recurring units from a hydrophobic monomer and recurring units from a monomer capable of undergoing β-elimination in an alkaline environment and having the formula



wherein R is an ethylenically unsaturated alkyl radical of from 2 to 5 carbon atoms; A, E and D are each selected from the group consisting of hydrogen, methyl and phenyl, provided that no more than one of A, E and D is methyl or phenyl; and Y is an activating group.

4,201,588

RADIATION SENSITIVE CO(III)COMPLEX PHOTOREDUCTION ELEMENT WITH IMAGE RECORDING LAYER

Anthony Adin, Rochester, and James C. Fleming, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 618,186, Sep. 30, 1975, abandoned, which is a continuation-in-part of Ser. No. 461,057, Apr. 15, 1974, abandoned. This application Sep. 7, 1976, Ser. No. 720,873
Int. Cl.² G03C 1/48, 1/49, 1/52, 1/72
U.S. Cl. 430—167 6 Claims

1. In an integral imaging element comprising a support, a radiation-sensitive layer capable of generating amines and an image-recording layer distinct from said radiation-sensitive layer and responsive to said amines to form an image corre-

sponding to imagewise exposure of said radiation-sensitive layer, said layers being disposed on said support;

the improvement wherein said radiation-sensitive layer comprises, in chemical association, (a) a reducible, inert cobalt(III) complex free of a sensitizable anion and containing amine ligands, (b) a photoreductant capable of forming in the absence of a cobalt(III) complex, upon exposure to activating radiation longer than 300 nanometers in wavelength, a reducing agent that reduces said complex and releases amines, said photoreductants being selected from the group consisting of disulfides, diazoanthrones, diazophenanthrones, aromatic azides, and carbazides; and (c) an external source of labile hydrogen atoms.

6. In an integral imaging element comprising a support, a radiation-sensitive layer capable of generating amines and an image-recording layer distinct from said radiation-sensitive layer and responsive to said amines to form an image corresponding to imagewise exposure to said radiation-sensitive layer, said layers being disposed on said support;

the improvement wherein said radiation-sensitive layer comprises, in chemical association, (a) a reducible, inert cobalt(III) complex free of a sensitizable anion and containing amine ligands, (b) a photoreductant capable of forming in the absence of a cobalt(III) complex, upon exposure to activating radiation longer than 300 nanometers in wavelength, a reducing agent that reduces said complex and releases amines, said photoreductant being selected from the group consisting of

(1) 2,5-dimethyl-1,4-benzoquinone
(2) 2,6-dimethyl-1,4-benzoquinone
(3) duroquinone
(4) 2-(1-formyl-1-methylethyl)-5-methyl-1,4-benzoquinone
(5) 2-methyl-1,4-benzoquinone
(6) 2-phenyl-1,4-benzoquinone
(7) 2,5-dimethyl-6-(1-formylethyl)-1,4-benzoquinone
(8) 2-(2-cyclohexanonyl)-3,6-dimethyl-1,4-benzoquinone
(9) 1,4-naphthoquinone
(10) 2-methyl-1,4-naphthoquinone
(11) 2,3-dimethyl-1,4-naphthoquinone
(12) 2,3-dichloro-1,4-naphthoquinone
(13) 2-thiomethyl-1,4-naphthoquinone
(14) 2-(1-formyl-2-propyl)-1,4-naphthoquinone
(15) 2-(2-benzoylethyl)-1,4-naphthoquinone
(16) 9,10-phenanthrenequinone (17) 2-ethylamino-3-piperidino-1,4-naphthoquinone
(18) 2-ethoxymethyl-1,4-naphthoquinone
(19) 2-phenoxymethyl-1,4-naphthoquinone
(20) 5,8-dihydro-1,4-naphthoquinone
(21) 5,8-dihydro-2,5,8-trimethyl-1,4-naphthoquinone
(22) 2,5-bis(dimethylamino)-1,4-benzoquinone
(23) 2,5-dimethyl-3,6-bis(dimethylamino)-1,4-benzoquinone
(24) 2,5-dimethyl-3,6-bispyrrolidino-1,4-benzoquinone
(25) 2-ethoxy-5-methyl-1,4-benzoquinone
(26) 2,6-dimethoxy-1,4-benzoquinone
(27) 2,5-dimethoxy-1,4-benzoquinone
(28) 2,6-diethoxy-1,4-benzoquinone
(29) 2,5-diethoxy-1,4-benzoquinone
(30) 2,5-bis(2-methoxyethoxy)-1,4-benzoquinone
(31) 2,5-bis(β-phenoxyethoxy)-1,4-benzoquinone
(32) 2,5-diphenethoxy-1,4-benzoquinone
(33) 2,5-di-n-propoxy-1,4-benzoquinone
(34) 2,5-di-isopropoxy-1,4-benzoquinone
(35) 2,5-di-n-butoxy-1,4-benzoquinone
(36) 2,6-di-sec-butoxy-1,4-benzoquinone
(37) 1,1'-bis(5-methyl-1,4-benzoquinone-2-yl)-diethyl ether
(38) 2-methyl-5-morpholinomethyl-1,4-benzoquinone
(39) 2,3,5-trimethyl-6-morpholinomethyl-1,4-benzoquinone
(40) 2,5-bis(morpholinomethyl)-1,4-benzoquinone
(41) 2-hydroxymethyl-3,5,6-trimethyl-1,4-benzoquinone
(42) 2-(1-hydroxyethyl)-5-methyl-1,4-benzoquinone
(43) 2-(1-hydroxy-n-propyl)-5-methyl-1,4-benzoquinone
(44) 2-(1-hydroxy-2-methyl-n-propyl)-5-methyl-1,4-benzoquinone
(45) 2-(1,1-dimethyl-2-hydroxyethyl)-5-methyl-1,4-benzoquinone
(46) 2-(1-acetoxyethyl)-5-methyl-1,4-benzoquinone
(47) 2-(1-methoxyethyl)-5-methyl-1,4-benzoquinone
(48) 2-(2-hydroxyethyl)-3,5,6-trimethyl-1,4-benzoquinone
(49) 2-ethoxy-5-phenyl-1,4-benzoquinone
(50) 2-i-propoxy-5-phenyl-1,4-benzoquinone
(51) 1,4-dihydro-1,4-dimethyl-9,10-anthraquinone
(52) 2-dimethylamino-1,4-naphthoquinone
(53) 2-methoxy-1,4-naphthoquinone
(54) 2-benzyloxy-1,4-naphthoquinone
(55) 2-methoxy-3-chloro-1,4-naphthoquinone
(56) 2,3-dimethoxy-1,4-naphthoquinone
(57) 2,3-diethoxy-1,4-naphthoquinone
(58) 2-ethoxy-1,4-naphthoquinone
(59) 2-phenethoxy-1,4-naphthoquinone
(60) 2-(2-methoxyethoxy)-1,4-naphthoquinone
(61) 2-(2-ethoxyethoxy)-1,4-naphthoquinone
(62) 2-(2-phenoxy)ethoxy-1,4-naphthoquinone
(63) 2-ethoxy-5-methoxy-1,4-naphthoquinone
(64) 2-ethoxy-6-methoxy-1,4-naphthoquinone
(65) 2-ethoxy-7-methoxy-1,4-naphthoquinone
(66) 2-n-propoxy-1,4-naphthoquinone
(67) 2-(3-hydroxypropoxy)-1,4-naphthoquinone
(68) 2-isopropoxy-1,4-naphthoquinone
(69) 7-methoxy-2-isopropoxy-1,4-naphthoquinone
(70) 2-n-butoxy-1,4-naphthoquinone
(71) 2-sec-butoxy-1,4-naphthoquinone
(72) 2-n-pentoxy-1,4-naphthoquinone
(73) 2-n-hexoxy-1,4-naphthoquinone
(74) 2-n-heptoxy-1,4-naphthoquinone
(75) 2-acetoxymethyl-3-methyl-1,4-naphthoquinone
(76) 2-methoxymethyl-3-methyl-1,4-naphthoquinone
(77) 2-(β-acetoxyethyl)-1,4-naphthoquinone
(78) 2-N,N-bis(cyanomethyl)ainomethyl-3-methyl-1,4-naphthoquinone
(79) 2-methyl-3-morpholinomethyl-1,4-naphthoquinone
(80) 2-hydroxymethyl-1,4-naphthoquinone
(81) 2-hydroxymethyl-3-methyl-1,4-naphthoquinone
(82) 2-(1-hydroxyethyl)-1,4-naphthoquinone
(83) 2-(2-hydroxyethyl)-1,4-naphthoquinone
(84) 2-(1,1-dimethyl-2-hydroxyethyl)-1,4-naphthoquinone
(85) 2-bromo-3-isopropoxy-1,4-naphthoquinone
(86) 2-ethoxy-3-methyl-1,4-naphthoquinone
(87) 2-chloro-3-piperidino-1,4-naphthoquinone
(88) 2-morpholino-1,4-naphthoquinone
(89) 2,3-dipiperidino-1,4-naphthoquinone
(90) 2-dibenzylamino-3-chloro-1,4-naphthoquinone
(91) 2-methyloxycarbonylmethyl-1,4-naphthoquinone
(92) 2-(N-ethyl-N-benzylamino)-3-chloro-1,4-naphthoquinone
(93) 2-morpholino-3-chloro-1,4-naphthoquinone
(94) 2-pyrrolidino-3-chloro-1,4-naphthoquinone
(95) 2-diethylamino-3-chloro-1,4-naphthoquinone
(96) 2-diethylamino-1,4-naphthoquinone
(97) 2-piperidino-1,4-naphthoquinone
(98) 2-pyrrolidino-1,4-naphthoquinone
(99) 2-(2-hexyloxy)-1,4-naphthoquinone
(100) 2-neo-pentyloxy-1,4-naphthoquinone
(101) 2-(2-n-pentyloxy)-1,4-naphthoquinone
(102) 2-(3-methyl-n-butoxy)-1,4-naphthoquinone
(103) 2-(6-hydroxy-n-hexoxy)-1,4-naphthoquinone
(104) 2-ethoxy-3-chloro-1,4-naphthoquinone
(105) 2-di(phenyl)methoxy-1,4-naphthoquinone
(106) 2-(2-hydroxyethyl)-3-chloro-1,4-naphthoquinone
(107) 2-methyl-3-(1-hydroxymethyl)ethyl-1,4-naphthoquinone
(108) 2-azetidino-3-chloro-1,4-naphthoquinone
(109) 2-(2-hydroxyethyl)-3-bromo-1,4-naphthoquinone and
(110) 2,3-dimorpholino-1,4-naphthoquinone;

and (c) an internal or an external source of labile hydrogen atoms.

4,201,589
SILVER HALIDE PHOTO-SENSITIVE MATERIAL PREPARED WITH SOLVENT AND SOLVENT SOLUBLE POLYMER

Shinji Sakaguchi; Seiiti Kubodera; Jun Arakawa; Keisuke Shiba, and Nobuo Tsuji, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan and National Patent Development Corporation, New York, N.Y.

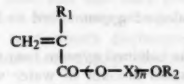
Continuation of Ser. No. 605,390, Aug. 6, 1975, abandoned. This application Apr. 20, 1979, Ser. No. 31,850

Claims priority, application Japan, Aug. 26, 1974, 49-96998

Int. Cl.[2] G03C *1/92, 1/06, 1/22, 1/34*

U.S. Cl. 430—139 **22 Claims**

1. A method of incorporating a hydrophobic photographic substance which is a hydrophobic photographic coupler, an antioxidant, an antifogging agent or a fluorescent whitening agent into a hydrophilic colloid of a silver halide photo-sensitive material which comprising mixing said hydrophobic photographic substance with a solution in an organic solvent of an organic solvent soluble polymer containing 5 to 100 mol % of recurring units represented by the following general formula (I)



where, in the formula R_1 represents a hydrogen atom or methyl group; R_2 represents a hydrogen atom or an alkyl group containing 1 to 12 carbon atoms, X is a bivalent hydrocarbon radical containing 2 to 8 carbon atoms selected from the group consisting of a alkylene group, a haloalkylene group and a hydroxy alkylene group, and n is an integer of 1 to 50, the remaining part of the polymer being made of recurring units of an addition polymerizable unsaturated compound, the organic solvent soluble polymer being present in a weight ratio to said hydrophobic photographic substance of from 20 to 0.01:1 to form a substantially water-immiscible mixture, and finely dispersing said substantially water-immiscible mixture in an aqueous solution of said hydrophilic colloid.

4,201,590
HEAT SENSITIVE REACTIVE PRODUCTS OF HEXAARYLBIIMIDAZOLE AND ANTIHALATION DYES

Steven R. Levinson, and Anthony Adin, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 834,587, Sep. 19, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 954,011

Int. Cl.[2] G03C *1/02*

U.S. Cl. 430—617 **19 Claims**

1. A colored, heat bleachable antihalation composition consisting essentially of, in reactive association, (i) at least one hexaarylbiimidazole with (ii) at least one antihalation dye that is reactive with the product formed upon heating said hexaarylbiimidazole to a temperature of at least about 90° C., and wherein said composition becomes essentially colorless within about 20 minutes upon heating to a temperature of at least about 90° C.

4,201,591
ELECTRICALLY ACTIVATED RECORDING MATERIAL AND PROCESS

Raymond F. Reithel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 858,780, Dec. 8, 1977, abandoned. This application Nov. 17, 1978, Ser. No. 961,822

Int. Cl.[2] G03C *1/10*

U.S. Cl. 430—619 **5 Claims**

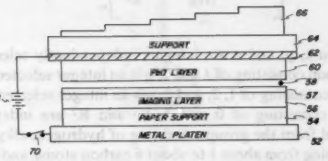
1. A charge-sensitive, electrically activated recording composition comprising

(A) an oxidation-reduction image-forming combination comprising

(i) an organic silver salt oxidizing agent, with

(ii) a reducing agent selected from the group consisting of 3-pyrazolidone, phenolic, reductone, and sulfonamidophenol reducing agents, and

(B) a photographic speed-increasing concentration of an organic photographic speed-increasing electron acceptor which consists essentially of a compound selected from the group consisting of



(I) anthraquinone and substituted anthraquinone electron acceptors,

(II) phthalaldehyde,

(III) tetrachlorophthalonitrile,

(IV) tetrachlorophthalic anhydride,

(V) p-chloranil,

(VI) α,α,α,α,α',α',α'-hexachloro-p-xylene,

(VII) cobaltihexamine trifluoroacetate, and combinations thereof, and a synthetic polymeric binder.

4,201,592
PLATING-INHIBITOR FOR PARTIALLY PLATING STEEL PLATE WITH MOLTEN METAL

Koichi Doi, Toyonaka; Hisao Kato, Hirakata, and Takeo Kurauchi, Neyagawa, all of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo and Nippon Paint Co., Ltd., Osaka, both of, Japan

Filed Sep. 22, 1977, Ser. No. 835,814

Claims priority, application Japan, Oct. 14, 1976, 51-122324

Int. Cl.[2] C23C *1/02*

U.S. Cl. 106—2 **18 Claims**

1. A plating-inhibitor capable of use in partially plating a steel plate with a molten metal, comprising (a) at least one water-soluble phosphate type base selected from the group consisting of (i) metal phosphates, (ii) metal condensed phosphates and (iii) their modified metal phosphates, said water-soluble phosphate type base having a xM_2O_x/P_2O_5 mole ratio of 0.3–3.0, wherein M is a metal atom having a valence of 1 to 4 and x is the valence of the metal atom, and (b) at least one inorganic inert powdery material having a particle size of 1–100μ which is heat-resistant and substantially non-reactive with the molten metal, the non-volatile content volume ratio of said ingredient (a) to said ingredient (b) being 5–70:95–30.

4,201,593
NOVEL INTUMESCENT COMPOSITION

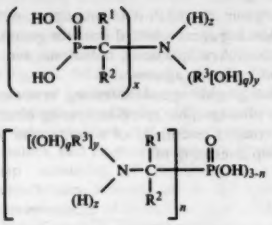
Kenneth J. Sienkowski; Richard R. Nicholson; Ray E. Smith, and Jayendra G. Shukla, all of Ann Arbor, Mich., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Dec. 6, 1978, Ser. No. 966,930

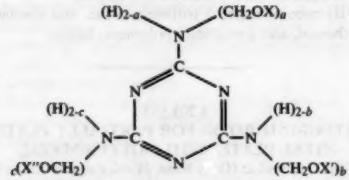
Int. Cl.[2] C09D *5/18*

U.S. Cl. 106—18.14 **9 Claims**

1. An intumescent composition comprising a hydroxyalkyl amino alkyl phosphonic acid, a cyclic nitrogen compound, and water, wherein said phosphonic acid is selected from the group consisting of



wherein x, y, and n are integers independently selected from the group consisting of 1 and 2, q is an integer selected from the group consisting of 1, 2, and 3, z is an integer selected from the group consisting of 0 and 1, R^1 and R^2 are independently selected from the group consisting of hydrogen, alkyl radicals containing from about 1 to about 6 carbon atoms, and haloalkyl radicals containing from about 1 to about 6 carbon atoms, and R^3 is selected from the group consisting of alkyl radicals containing from about 1 to about 6 carbon atoms and haloalkyl radicals containing from about 3 to about 6 carbon atoms, provided that the total number of carbon atoms in the R^1, R^2, and R^3 groups does not exceed about 14; and wherein said cyclic nitrogen compound is



wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, and X, X', and X'' are independently selected from the group consisting of hydrogen and $-CH_3$.

4,201,594

METHOD FOR MAKING REFRACTORY ARTICLES

Ian R. Walters, Huddersfield, and Harold G. Emblem, Mirfield, both of England, assignors to Zirconal Processes Limited, Bromley, England

Continuation-in-part of Ser. No. 748,702, Dec. 8, 1976, abandoned, which is a division of Ser. No. 561,347, Mar. 24, 1975, Pat. No. 4,025,350. This application Feb. 6, 1978, Ser. No. 875,411

The portion of the term of this patent subsequent to Apr. 17, 1994, has been disclaimed.

Int. Cl.[2] B25B 7/28

U.S. Cl. 106—38.35 **2 Claims**

1. A method of making a refractory article comprising:

(a) preparing a liquid, flowable slurry by combining a refractory powder, an aqueous solution of a zirconium salt which when dissolved in water yields an aqueous solution that is alkaline, a gellation-inducing agent, and a gellation-delaying agent; said gellation-inducing agent being selected from the group consisting of dead burned magnesium powder and powdered magnesia-containing spinel, and said gellation-delaying agent being selected from the group consisting of magnesium acetate, magnesium lactate, ammonium lactate, glycine, betaine, fructose, a polyhydric alcohol selected from the group glycerol, sorbitol and mannitol and the aminoalcohols; the amounts of refractory powder, solution of zirconium, salt, gellation-inducing agent and gellation-delaying agent being such that the slurry will set to a coherent state upon standing;

(b) pouring the slurry while liquid into a mould;

(c) allowing the slurry in the mould to set to form a coherent green shape; and,

(d) removing the green shape from the mould, drying the green shape and firing the dried green shape to form a sintered refractory article.

4,201,595

PROCESS FOR PREPARING CALCINED GYPSUM AND GYPSUM BOARD

Eugene E. O'Neill, Okeene, Okla., assignor to United States Gypsum Company, Chicago, Ill.

Continuation-in-part of Ser. No. 777,213, Mar. 14, 1977, Pat. No. 4,117,070. This application Sep. 5, 1978, Ser. No. 939,624

Int. Cl.[2] C04B 11/00

U.S. Cl. 106—109 **21 Claims**

12. An improved process for preparing calcined gypsum characterized by providing the calcined gypsum with a reduced water demand while maintaining its ability to develop full compressive strength in a cast gypsum product which comprises:

(1) supplying calcined gypsum feed to be conveyed to a blender;

(2) conveying the calcined gypsum feed to the blender;

(3) blending a small amount of water with said calcined gypsum, said water ranging from about 1% to about 10% by weight of the calcined gypsum feed;

(4) allowing the water treated calcined gypsum to heal;

(5) drying the healed calcined gypsum by subjecting it to elevated temperatures;

(6) grinding the dried, healed calcined gypsum to increase the surface area of the healed gypsum particles, whereby the surface is reactivated to improve the rate of strength development and the ultimate strength in a gypsum product; and

(7) recovering a dried, healed calcined gypsum which is storage stable, has reduced water demand and is capable of developing substantially full compressive strength in a gypsum product.

4,201,596

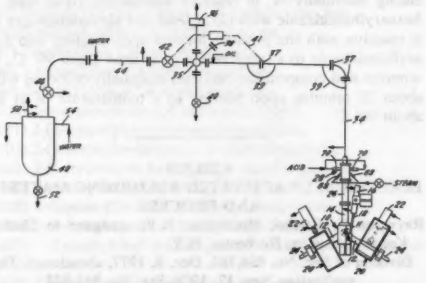
CONTINUOUS PROCESS FOR CELLULOSE SACCHARIFICATION

John A. Church; Derek Wooldridge, both of Princeton; Reginald L. Burroughs, Trenton, all of N.J.; Adolph A. Strzepek, Easton, Pa., and William J. Thompson, Lambertville, N.J., assignors to American Can Company, Greenwich, Conn.

Filed Jan. 12, 1979, Ser. No. 2,885

Int. Cl.[2] C13K 1/02

U.S. Cl. 127—37 **17 Claims**



1. A continuous process for the saccharification of cellulosic materials, comprising the steps of:

(a) substantially continuously introducing into one end of a tubular reactor an aqueous mixture of cellulosic material

containing from about 15 to about 45 weight percent solids, and constricting the other end of said reactor so as to develop a back pressure therein;

(b) admixing a strong mineral acid with said material in a concentration appropriate to catalyze the hydrolysis thereof;

(c) substantially continuously injecting steam into said mixture, at a location downstream from said one end of said reactor, to produce a reaction mass containing about 10 to about 25 weight percent solids, said steam being injected in an amount sufficient to maintain the temperature of said reaction mass at about 160° Centigrade to about 250° Centigrade, and to thereby effect hydrolysis of said material in the presence of said acid, the solids content of said reaction mass being about 50 to 85 percent of that of said mixture;

(d) thereafter, substantially continuously passing said reaction mass into and through a reaction zone of said reactor located downstream from the steam injection location, the length of said reaction zone and the rate of mixture introduction being so selected as to afford an average residence time of about one to ten minutes for each increment of said mass in said zone, and said back pressure therewithin being about 90 to 400 pounds per square inch, gauge; and

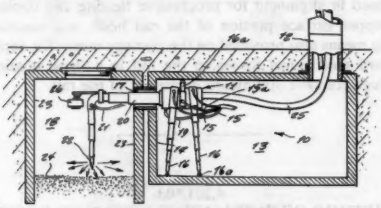
(e) substantially continuously discharging said mass from said reactor, and recovering products of saccharification therefrom.

4,201,597

NO DIG SEEPAGE PIT CLEANER

James A. Armstrong, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Building, 233 Broadway, both of New York, N.Y. 10007

Filed Jun. 21, 1976, Ser. No. 698,075
Int. Cl.[2] B08B *3/02, 9/08*
U.S. Cl. 134—167 R **1 Claim**



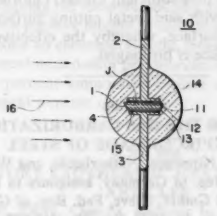
1. A seepage pit cleaner comprising a fluid conduit and a cleaning assembly, said entire assembly being insertable into a septic tank having a floor, ceiling and walls via a sewer drain line, said assembly including a first means to support itself movably and structurally independent relative the septic tank walls and ceiling including a horizontally telescopically extendable hollow boom in communication with said conduit said boom including a nozzle at a forward end thereof, said boom and nozzle being adapted for insertion and extension through a seepage pit drainage hole, including remote control means for extending said boom, wherein said assembly comprises a head hinged to the conduit and being pivotable from a folded vertical to an open horizontal position, said head being telescopically horizontally extendable and including a forward tip housing a vertically extendable fluid line provided with a nozzle.

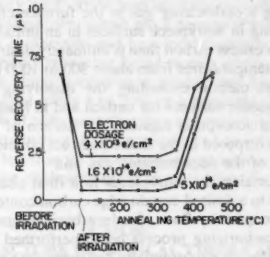
4,201,598

ELECTRON IRRADIATION PROCESS OF GLASS PASSIVATED SEMICONDUCTOR DEVICES FOR IMPROVED REVERSE CHARACTERISTICS

Tomoyuki Tanaka; Toshikatsu Shirasawa, and Masahiro Okamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 1, 1977, Ser. No. 820,698
Claims priority, application Japan, Aug. 11, 1976, 51-95855
Int. Cl.[2] H01L *7/54, 21/263*
U.S. Cl. 148—1.5 **9 Claims**





1. A process for manufacturing a semiconductor device having improved reverse characteristics comprising the steps of:

(a) preparing a semiconductor assembly comprising a semiconductor body which has at least one p-n junction therein and first and second main surfaces at the both ends thereof, an edge face of the p-n junction being exposed to the body, and first and second electrodes each being in ohmic contact with the corresponding main surfaces,

(b) forming a passivating coating of an alkali-free glass layer on the edge face to protect the body from mechanical damage thereto,

(c) irradiating the semiconductor body through the coating to radiation rays sufficient to cause lattice defects in the body so as to shorten the life time of the minority carriers down to a predetermined value and to increase the reverse leak current at the p-n junction, and

(d) annealing the semiconductor assembly after the irradiation, said annealing being carried out at an elevated temperature for a period of time sufficient to recover the electric characteristics damaged in the step of the irradiation, the annealing being carried out under such a condition that the increased reverse leak current is decreased to a predetermined value smaller than the increased value, while the degree of the shortened life time is substantially maintained during the annealing.

4,201,599

RESTORATION AND PROTECTION OF CUTTING SURFACES

Trevor Morgans, c/o Kaplan & Stratton Advocates, P.O. Box 40111, Queensway House, Kaunda St., Nairobi, Kenya

Filed Jul. 6, 1978, Ser. No. 922,312
Int. Cl.[2] C23F 9/02
U.S. Cl. 148—6.14 R 37 Claims

1. A method of protecting a metal cutting surface as ground which comprises applying to the cutting surface an amount sufficient to protect said metal cutting surface of a chlorhexidine compound dispersed or dissolved in a carrier therefor and for a predetermined time sufficient for said chlorhexidine compound to interact with said metal cutting surface to protect said metal cutting surface, whereby the effective life of the ground cutting surface is prolonged.

4,201,600

METHOD FOR THE GAS CARBURIZATION OF WORKPIECES MADE OF STEEL

Cornelis H. Luiten, Nijmegen, Netherlands, and Werner Göhring, Kleve, Fed. Rep. of Germany, assignors to Ipsen Industries International GmbH, Kleve, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 942,978
Claims priority, application Switzerland, Sep. 22, 1977, 11608/77
Int. Cl.[2] C21D 1/48
U.S. Cl. 148—16.5 12 Claims

1. A method of gas carburization of workpieces made of steel in a furnace chamber, comprising the steps of

flowing a carburizing gas in the furnace chamber and dissolving in workpiece surfaces in an initial phase of treatment excess carbon than is ultimately desired at carburization temperatures from about 800 to 1000 degrees C., said excess carbon exceeding the dissolving power of the workpiece surfaces for carbon and at least corresponding to the absorption capacity for carbon of workpiece surfaces disposed in the shade (indirect contact places) of the flow of the decarburizing gas, and

decarburizing the workpieces in a final phase of the treatment to a desired certain edge carbon content by changing of the quantity flow of a decarburizing gas,

the decarburizing process being performed by exclusively introducing a substantially hydrogen-free oxygen-containing decarburization gas in the furnace chamber,

the initial phase constituting a supercarburization operation is performed with soot deposit on said workpiece surfaces by an oversupply of carbon in the carburization gas, the oversupply exceeding the dissolving power of the surface of the workpieces, and in the initial phase, exclusively a hydrocarbon is fed into the furnace chamber for supercarburization,

a nitrogen-oxygen mixture constituting air exclusively is used as said decarburization gas,

controlling the soot deposit on said workpiece by varying a supplied quantity of the hydrocarbon,

controlling the decarburizing by the oxygen potential in the air and varying the flow of the air into the furnace chamber dependent thereon.

4,201,601

COPPER BRAZING ALLOY FOILS CONTAINING GERMANIUM

Thomas L. D'Silva, Beaverton, Oreg., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 925,908, Jul. 19, 1978, abandoned. This application Mar. 8, 1979, Ser. No. 18,560
Int. Cl.[2] C22C 9/00
U.S. Cl. 148—32 3 Claims

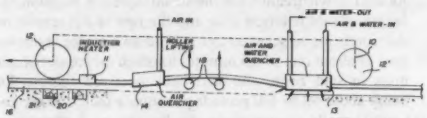
1. A brazing alloy material consisting essentially of a composition having the formula Cu_xGe_y wherein x is from about 60 to about 95 atomic percent, y is from about 5 to about 40 atomic percent and containing a sufficient amount of an amorphous phase and a metastable, microcrystalline solid solution phase to render the material ductile; said material being in the form of a sheet having a thickness of from about 0.0005 to about 0.005 inches.

4,201,602

RAIL HARDENING MACHINE AND METHOD

Charles A. Shupe, Beaconsfield, Canada, assignor to Canron Corporation, West Columbia, S.C.

Filed Jun. 21, 1978, Ser. No. 917,652
Claims priority, application United Kingdom, Jul. 7, 1977, 28570/77
Int. Cl.[2] C21D 1/78
U.S. Cl. 148—146 12 Claims



1. A method of heat treating at least the upper surface of the head of at least one railroad rail forming part of an in situ railroad, which comprises moving along the in situ railroad a carriage runnning on the in situ railroad and having thereon heating, quenching and bending means, and operating said heating and quenching means for causing progressive heating and quenching along an upper surface portion of the head of said at least one rail, and simultaneously operating said bending means for mechanically bending the rail progressively along its length in a sense tending to produce a downwardly concave curve for at least partly counteracting the tendency of the rail to bend upwardly concave due to the heat treatment.

6. Apparatus for heat treating at least the upper surface portion of the head of a railroad rail forming part of an in situ railroad, comprising carriage means movable along the track and provided with heating means and trailing quenching means disposed in alignment for progressive heating and cooling of the upper surface portion of the rail head, and mechanical lifting means also provided on the carriage means for applying upward mechanical forces to the rail in a sense tending to produce concave downward curvature of the rail.

4,201,603

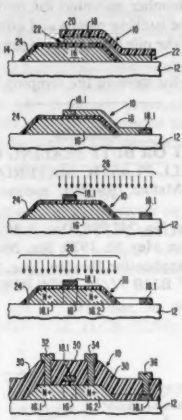
METHOD OF FABRICATING IMPROVED SHORT CHANNEL MOS DEVICES UTILIZING SELECTIVE ETCHING AND COUNTERDOPING OF POLYCRYSTALLINE SILICON

Joseph H. Scott, Jr., Plainsboro, and Alfred C. Ipri, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,510
Int. Cl.[2] H01L 21/225, 21/308
U.S. Cl. 148—174 8 Claims

1. In a method of making a semiconductor device which includes the steps of forming a uniform layer of polycrystalline silicon having an exposed edge over the silicon body, forming a masking layer on the polycrystalline silicon layer, the masking layer extending at least to the exposed edge of the polycrystalline silicon layer, embedding a dopant into the exposed edge of the polycrystalline silicon layer for a desired distance laterally along the polycrystalline silicon layer in order to transform the uniform layer to a selectively etchable layer, removing the masking layer, and selectively etching the poly-

crystalline silicon layer to remove the undoped portion thereof, the improvement comprising:



counterdoping the doped portions of the polycrystalline silicon layer to raise the conductivity thereof.

4,201,604

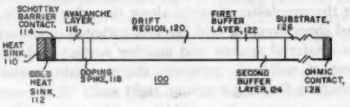
PROCESS FOR MAKING A NEGATIVE RESISTANCE DIODE UTILIZING SPIKE DOPING

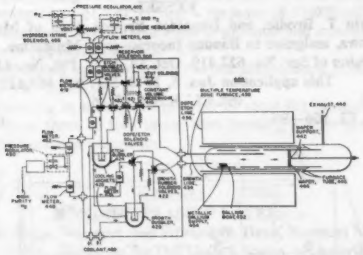
Robert W. Bierig, and S. Robert Steele, both of Sudbury, Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 604,378, Aug. 13, 1975, abandoned. This application Sep. 8, 1976, Ser. No. 721,253

Int. Cl.[2] H01L *21/205, 29/90*

U.S. Cl. 148—175 **14 Claims**





1. A method for producing a doping spike for terminating an avalanche region in a diode device comprising the steps of:

vapor depositing a drift region layer of semiconductor material upon a substrate; and

injecting a predetermined quantity of a pre-selected dopant material toward said substrate, said predetermined quantity of dopant material being vapor deposited upon said drift region and forming said doping spike.

4,201,605

GAS GENERATOR PROPELLANT FOR AIRBREATHING MISSILES

Russell Reed, Jr., Ridgecrest; George F. Sieg, China Lake; Elmer J. Rhyn, Ridgecrest, and Billy E. Waldon, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 31, 1978, Ser. No. 929,597

Int. Cl.[2] C06B *45/10*

U.S. Cl. 149—19.1 **3 Claims**

1. A propellant formulation for a gas generator consisting essentially of from about 40 to 48 weight percent of a polysulfide binder having the formula: $+SCH_2CH_2OCH_2OCH_2CH_2S\frac{}{n}$ wherein n is a positive integer of sufficient magnitude to render the polysulfide an elastomeric solid, from about 20 to about 34 weight percent ammonium perchlorate, from about 8 to about 31 weight percent ammonium oxalate and from about 1 to about 4 weight percent iron oxide.

4,201,606

REFRACTORY EXOTHERMIC HEATING INSULATING ARTICLES

Frank Neat, Elora, Canada, assignor to Foseco Trading AG., Chur, Switzerland

Filed Jul. 14, 1978, Ser. No. 924,564

Claims priority, application United Kingdom, Jul. 19, 1977, 30271/77

Int. Cl.[2] C22C *38/40*

U.S. Cl. 149—37 **13 Claims**

1. A refractory exothermic heat insulating article of use in the metallurgical industry which has a density of less than 0.75 g/cc, has both exothermic and heat insulating properties and which is formed by removing liquid from a slurry, the solids content of the slurry including a binder and including by weight of the total solids 8 to 20% of a particulate oxidisable metal, 5 to 25% of a fibrous refractory material, 5 to 20% of an expanded perlite having in its dry powder state a bulk density (untamped) of less than 0.15 g/cc and a proportion of an oxidising agent for the oxidisable metal in particulate form.

4,201,607

MANUFACTURE OF OPTICAL FIBER CABLES

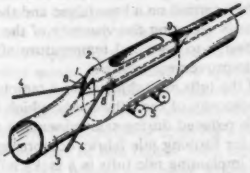
Peter Rautenberg, Düsseldorf; Hartmut Hildenbrand, and Daljit-Singh Parmar, both of Essen, all of Fed. Rep. of Germany, assignors to AEG - Telefunken Kabelwerke AG, Rheydt, Monchen-Gladbach, Fed. Rep. of Germany

Filed Nov. 10, 1977, Ser. No. 850,832

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651725

Int. Cl.[2] B65B *11/00;* **G02B** *5/14*

U.S. Cl. 156—70 **5 Claims**



1. A method for producing an optical cable core composed of a plurality of optical cable elements, each element including a stable tube and at least one optical fiber lying loosely in the tube, said method comprising: slitting each tube open longitudinally and simultaneously inserting the at least one optical fiber into each tube through the slit formed therein; causing the slit in each tube to close behind the inserted fiber; and stranding the tubes containing the fibers together to form the core;

wherein said step of stranding is performed in a stranding machine directly after said step of causing the slit in each tube to close without winding the tubes on drums, and said step of slitting is performed in the stranding machine.

3. Apparatus for producing an optical cable core composed of a plurality of optical elements, each element including a stable tube and at least one optical fiber lying loosely in the tube, comprising a plurality of cutting devices, one for each said optical element and each cutting device being disposed downstream of a respective tube supply and being composed of a spacer member and a cutting blade fixed to the spacer member and presenting a cutting edge projecting from one end of the spacer member, each said cutting device being disposed in the path of longitudinal advance of such a tube for causing the cutting edge of said blade to traverse the tube wall and slit the tube while said spacer member engages in the resulting slit and separates the edges of the slit to give the tube the form of a trough, said spacer member being provided with guide means for guiding at least one optical fiber into the tube in the region where it has the form of a trough, and means for advancing said tubes with said at least one optical fiber therein past said cutting devices to allow said slit tubes to close and for advancing said elements to a stranding nipple to strand said elements into a cable core.

4,201,608

METHODS OF AND APPARATUS FOR MANUFACTURING PILE FABRICS

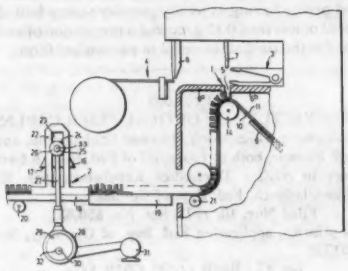
Herbert H. Currell, "Hillcrest", 32, Lickhill Rd. North,, Stourport on Severn, Worcestershire, England

Filed Apr. 11, 1978, Ser. No. 895,530

Claims priority, application United Kingdom, Apr. 15, 1977, 15766/77

Int. Cl.[2] D04H *11/00;* B32B *5/08*

U.S. Cl. 156—72 **10 Claims**



1. In a method of producing a pile fabric comprising the step of implanting tufts of pile yarn in a layer of adhesive at a first temperature while carried on a base fabric and the subsequent step of temporarily reducing the viscosity of the adhesive by heating the adhesive to a second temperature after such implantation, the improvement wherein

outer ends of the tufts are subjected to a tamping operation while the viscosity of the adhesive in which the tufts are implanted is reduced during said subsequent step.

8. Apparatus for forming pile fabric, comprising:

(a) means for implanting pile tufts in a tacky adhesive layer on a pre-formed base fabric at an attaching station and downstream of said means for implanting pile tufts while the adhesive is at a first temperature,

(b) means for moving the base fabric with the tufts projecting thereon along a path to a tamping station,

(c) means for heating the adhesive of the fabric to a second temperature at a position upstream of the tamping station for temporarily reducing the viscosity of the adhesive which permeates said yarn,

(d) backing means located at the tamping station for supporting the base fabric at the face thereof remote from the pile tufts,

(e) a tamping member mounted for movement toward and away from the backing means and effective to engage the outer ends of the pile tufts to tamp same into the adhesive, and

(f) drive means for moving the tamping member.

4,201,609

METHOD FOR T OR BUTT SEALING OF LAMINATED ALL-PLASTIC MATERIAL

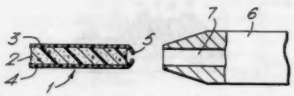
Jan-Erik Ölsén, Malmo, Sweden, assignor to AB Ziristor, Lund, Sweden

Continuation of Ser. No. 747,096, Dec. 3, 1976, abandoned. This application May 10, 1978, Ser. No. 904,537

Claims priority, application Sweden, Dec. 19, 1975, 75144436

Int. Cl.[2] B32B *31/26, 3/04;* B29C *27/02*

U.S. Cl. 156—85 **10 Claims**



1. A method for joining a first laminated sheet with another surface, said laminated sheet having a carrier layer of foamed thermoplastic material and outer layers of a compact thermoplastic material on opposed sides thereof, said method comprising directing a jet of hot air toward and substantially at right angles to the edge surface of the laminated sheet, directly contacting said edge surface with said hot air, the jet of hot air having such force and temperature as to cause the carrier layer of the laminated sheet to shrink and retract from the edge thereof and cause the outer layers of compact thermoplastic material to soften and bend inwardly toward the retracted carrier layer and meet substantially at the center plane of the laminated sheet thereby forming an integral layer of softened, compact thermoplastic material along the edge surface of the laminated sheet pressing said layer of softened, compact thermoplastic material against said another surface and allowing said layer of softened, compact thermoplastic material to harden thereby forming a strong, tight seal.

4,201,610

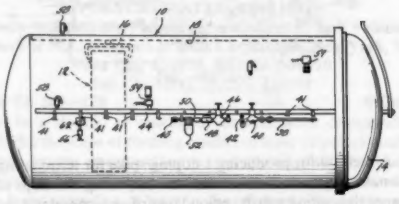
TIRE RETREADING METHOD USING PRESSURE VESSEL

Edwin T. Brodie, and Donaldee Brewer, both of Muscatine, Iowa, assignors to Bandag Incorporated, Muscatine, Iowa

Division of Ser. No. 622,419, Oct. 14, 1975, Pat. No. 4,025,047. This application Jan. 6, 1978, Ser. No. 867,612

Int. Cl.[2] B29H *17/36*

U.S. Cl. 156—96 **6 Claims**



1. In the method of bonding a precured tread strip to a tire by means of a vulcanizable bonding material interposed between the tire and the tread strip, placing the assembly of tire and tread strip in a vessel and pressurizing the interior of the

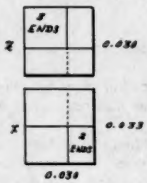
tire to inflate the same and pressurizing the interior of the vessel in a manner to press the tread strip and the tire together, the improvement comprising: supplying a pressure fluid through a first pressure regulator to a conduit into a manifold, passing a portion of the pressure fluid in the manifold to the interior of the tire, and simultaneously passing another portion of the pressure fluid in the manifold through a pressure differential check valve and a second pressure regulator to the interior of the vessel at a predetermined lower pressure than the pressure being supplied to the interior of the tire.

4,201,611

CARBON/CARBON COMPOSITE FOR RE-ENTRY VEHICLE APPLICATIONS

Edward R. Stover, Wayne, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 17, 1978, Ser. No. 896,861
Int. Cl.[2] B32B *5/12, 31/26, 33/00;* **B64G** *1/30*
U.S. Cl. 156—155 **1 Claim**



1. A method for fabricating a re-entry vehicle nose-tip material which comprises the steps of

(a) forming a billet of a three directional carbon-carbon material having a plurality of graphite bundles oriented in an axial "Z" direction and in a lateral "X" or "Y" direction, said axially oriented bundles each having three ends of graphite yarn with 0.030 in spacing between axial bundles and said laterally oriented bundles each having two ends of graphite yarn with 0.030 to 0.035 inches along the length;

(b) heating said billet within a vacuum to a temperature of about 1500° C. to clean the surfaces of the fibers;

(c) infiltrating said heated billet with carbon by passing said billet through an r.f. coil while heating at 0.001–0.003 atm. pressure in an atmosphere containing methane gas;

(d) impregnating said infiltrated billet with coal tar pitch at a temperature of 250° C. and a pressure of 15,000 psi;

(e) baking said impregnated billet at pressure and a temperature of approximately 650° C.;

(f) graphitizing said baked billet at one atmospheric pressure to 2700° C.; and

(g) repeating in sequence the cycle of steps (b) through (f) for from three to four times, thus forming a high density carbon-carbon composite.

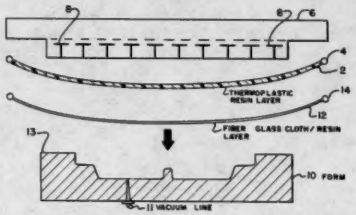
4,201,612

BONDING PLASTIC LAYERS

Irving E. Figge, Newport, and Edward H. Dean, Newport News, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 15, 1978, Ser. No. 906,187
Int. Cl.[2] C09J *5/00;* **B32B** *31/16, 1/10;* **B29C** *17/03*
U.S. Cl. 156—224 **1 Claim**

1. A process for forming laminated articles in which an acrylic copolymer thermoplastic resin layer is bonded to a fiber reinforced epoxide resin thermoset layer which comprises strengthening the bond between the epoxy resin and acrylic resin layers by vacuum forming wherein a sheet of uncured fiber reinforced epoxy resin is placed over a vacuum forming mold, a thermoplastic acrylic copolymer sheet is heated to a vacuum forming temperature, and at said temperature the heated acrylic copolymer sheet and the epoxy resin sheet are vacuum formed while concomitantly the cross-linking of the



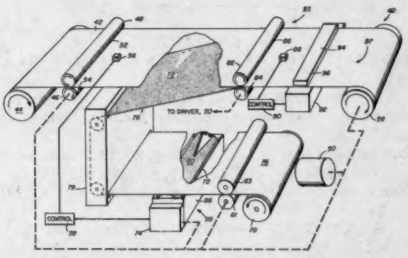
epoxy resin takes place, ultimately effecting a complete cure, creating a strong bond between the thermoplastic and thermoset layers in the resulting laminated article.

4,201,613

METHOD AND APPARATUS INVOLVING ADHESIVE BACKED PHOTOGRAPHS

Anthony Olivieri, 23 Quaker La., Dedham, Mass. 02026, and Anthony J. Macrina, 47 Henry Ave., Melrose, Mass. 02176

Filed Jan. 24, 1978, Ser. No. 871,784
Int. Cl.[2] B32B *31/00, 7/14;* **B65C** *11/04*
U.S. Cl. 156—270 **13 Claims**



1. An apparatus for producing an adherent backed photograph, said apparatus comprising:

(a) an endless release web;

(b) drive means engaging said release web and advancing said release web along a travel path;

(c) an adhesive applying station disposed in said travel path;

(d) applicator means at said adhesive applying station, said applicator means including an adhesive carrying surface and an adhesive free surface, said applicator means positioned in said travel path for applying adhesive to certain areas of one face of said release web, other areas of said one face of said release web being adhesive free areas;

(e) an endless web of photographic prints having finished and unfinished surfaces on opposite faces;

(f) means for superposing said unfinished surface of said photographic print on said one face of said release web, said photographic prints superposed on said adhesive areas and said adhesive free areas; and

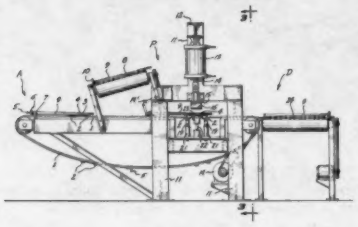
(g) slitting means disposed in said travel path for slitting said release web, portions of said release web covering said adhesive free areas and adjacent said slit forming a tab for removing said release web and exposing said adhesive.

4,201,614

SHAKE PANEL ASSEMBLING MACHINE

Craig S. Barker, Deerfield Beach, Fla., and Joe L. Bockwinkel, Winlock, Wash., assignors to Shakertown Corporation, Winlock, Wash.

Filed Nov. 4, 1977, Ser. No. 848,606
Int. Cl.[2] B29C *19/04;* B32B *19/02;* B30B *5/02*
U.S. Cl. 156—273 11 Claims



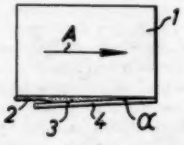
1. The method of assembling a shake panel which comprises applying thermosetting adhesive on one face of a backing strip, laying a plurality of resawn split shakes in a row on the backing strip with the sawn surfaces of the shakes in engagement with the backing strip and with the split, irregular surfaces exposed, holding the backing strip and shakes laid thereon stationary, pressing a solid readily deformable elastomer pad, of a hardness between 20 durometer and 40 durometer, against the irregular split surfaces of the shakes for applying pressure distributed substantially uniformly and equally over the irregular exposed surface of the shakes, and while the shakes are thus held against the backing, dielectrically setting the adhesive to bond all the shakes to the backing simultaneously.

4,201,615

APPARATUS FOR APPLYING AN ADHESIVE TO A BOOK

Lionel J. B. R. French, London, England, assignor to The Sulby Engineering Development Company Limited, London, England

Continuation of Ser. No. 828,103, Aug. 26, 1977, abandoned.
This application Sep. 18, 1978, Ser. No. 943,380
Claims priority, application United Kingdom, Sep. 10, 1976, 37663/76
Int. Cl.[2] B29C *19/00;* B42C *19/00;* B05C *11/02*
U.S. Cl. 156—304 3 Claims



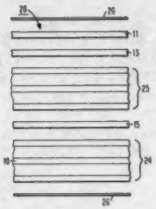
1. Apparatus so constructed and arranged as to be capable of preparing a book for adhesive securement, said apparatus comprising an element providing a flat compressing surface, means for moving a book over the said surface with the back thereof spaced from the surface by a gap, the said surface being so inclined that the gap diminishes in the direction of movement, means for introducing adhesive into the said gap, and wall members to enhance compression of adhesive at each side of the gap to confine the book and prevent escape of adhesive thereby.

4,201,616

DIMENSIONALLY STABLE LAMINATED PRINTED CIRCUIT CORES OR BOARDS AND METHOD OF FABRICATING SAME

Leroy N. Chellis, Endwell, and Theron L. Ellis, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,222
Int. Cl.[2] C09J *5/00*
U.S. Cl. 156—307.1 6 Claims



1. A method of forming a multi-layered printed circuit board comprising the steps of:

(a) forming a first section of the board of at least one layer of a first heat curable material having a first transition temperature;

(b) fully curing said first section by subjecting it to a temperature in excess of said first transition temperature for a period sufficient to effect a complete curing thereof;

(c) forming a second section of the board by placing one or more layers of a second heat curable material having a second transition temperature below that of said first transition temperature in contact with said first section, said second transition temperature being one which will not thermally affect the prior full cure of said first section; and

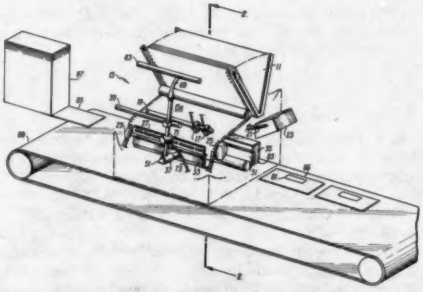
(d) fully curing said second section by subjecting it to a temperature in excess of said second transition temperature, but below said first transition temperature, for a period sufficient to effect a complete curing thereof.

4,201,617

UV LABEL SPRAYER FOR SEGREGATING MAIL

Winston A. Orsinger, Nazareth, and Warren D. Reinert, Easton, both of Pa., assignors to Bell & Howell Company, Phillipsburg, N.J.

Filed Apr. 3, 1979, Ser. No. 26,709
Int. Cl.[2] B32B *31/00*
U.S. Cl. 156—351 12 Claims



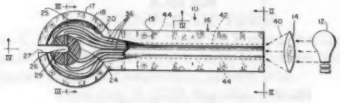
1. A method of zip-sorting mail comprising the steps of: providing sheets of address labels in rows and columns and placing indicia thereon to indicate when at least the first of

a group of labels changes from a first to a second selected zip arrangement;
moving said labels relative to an indicia sensing means;
sensing said indicia and providing a zip change signal to indicate a zip arrangement change;
spraying at least said first of said group of labels with a sensible dye in response to said zip-change signal;
separating said labels and thereafter applying said labels to envelopes in the same order as said labels are moved relative to said indicia sensing means; and,
subsequently sensing said sensible dye to identify envelopes having labels indicating a change in zip arrangement.

4,201,618
APPARATUS FOR CURING ADHESIVELY JOINED FIBER OPTIC ELEMENTS

Adolph L. Lewis, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 21, 1978, Ser. No. 926,978
Int. Cl.[2] B65H *69/02, 69/06*
U.S. Cl. 156—380 **7 Claims**



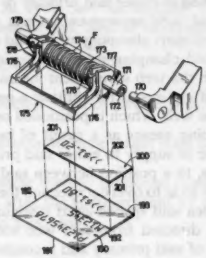
1. Apparatus for connecting light transmitting fiber optic elements comprising:
a clear adhesive sensitive to ultraviolet light for positioning between the ends of said elements to be connected;
a source of ultraviolet light capable of curing said adhesive; and
means for distributing said light substantially around the perimeter of said ends with said adhesive thereon to cure all areas of the adhesive simultaneously to provide a uniformly stressed fiber optic connection;
said means comprising a plurality of fiber optic conductors having their ends circumferentially disposed around the ends of the fiber optic elements to be connected, the opposite ends of said conductors being bundled and disposed in the light path from said light source.

4,201,619
PORTABLE LABEL PRINTING AND APPLYING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Division of Ser. No. 750,845, Dec. 15, 1976, Pat. No. 4,113,544. This application May 15, 1978, Ser. No. 905,751
Claims priority, application Japan, Dec. 20, 1975, 50-151235; Dec. 31, 1975, 50-158620
Int. Cl.[2] B65C *11/02*
U.S. Cl. 156—384 **7 Claims**

1. A portable label printing and applying machine, comprising a machine frame; a platen supported by said machine frame; label moving means for moving a label onto said platen to be imprinted; said label moving means being adapted to move an imprinted label to a label applicator;
a printing head;
an operating lever supported by and movable with respect to said machine frame for operating said label moving means and also for moving said platen and said printing head together for imprinting a label on said platen;
a label positioning and applying device comprising:
an applicator for receiving labels from said label moving means and being adapted to apply a label to a surface;
a label positioning frame beneath which a label is received from said label moving means; said applicator being adjacent said positioning frame, whereby a label to be applied by said applicator is also positioned beneath said positioning frame; a shaft for rotatably supporting said positioning frame and carried by said machine frame; biasing means for biasing said positioning frame around said shaft and toward a surface on which a label is to be applied; said

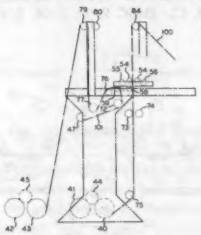


label moving means delivering labels to be applied beneath the side of said positioning frame toward which said positioning frame is biased; said positioning frame having borders defining its external shape, which said borders are selected and dimensioned to approximate the shape and dimension of the periphery of a label on which said positioning frame operates.

4,201,620
WEB ROLLING APPARATUS

Louis Platt, and Thomas S. Poteet, both of Seneca, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 29, 1978, Ser. No. 964,328
Int. Cl.[2] B65H *19/26*
U.S. Cl. 156—494 **8 Claims**



1. An apparatus for handling length of thermoplastic web which allows shifting from rolling said web upon one roll to rolling said web upon another roll comprising,
a pair of spaced-apart clamping means each having a clamping face and a web guiding surface,
a primary roll means for receiving thermoplastic web from a source of supply and forming a primary roll of said thermoplastic web, said primary roll means being positioned relative to said spaced-apart clamping means such that when thermoplastic web is directed thereto from said source of supply said thermoplastic web will lie outside said spaced-apart clamping means,
a secondary roll means for receiving a thermoplastic web from a source of supply and forming a secondary roll of said thermoplastic web, said secondary roll means being positioned relative to said spaced-apart clamping means such than when thermoplastic web is directed thereto from said source of supply said thermoplastic web will lie outside said spaced-apart clamping means in a position

opposite that in which said web will lie when supplied to said primary roll means from a source of supply,

a web securement means for securing one end of a thermoplastic web having its other end connected to either a primary roll or said secondary roll on said respective primary or secondary roll means, said web securement means being positioned such that a thermoplastic web attached to either said primary or said secondary roll and to said web securement means will pass between said spaced apart clamping means and over a respective one of the said clamping means on a side opposite the side on which the web securement means is positioned,

web shifting means for shifting a portion of a first thermoplastic web, which is positioned outside said spaced-apart clamping means as a result of being directed from said source of supply to either said primary or secondary roll means, to a position between said spaced-apart clamping means so as to overlap a second thermoplastic web passing between said spaced-apart clamping means as a result of being directed from said web securement means to the other of said primary and secondary roll means,

activator means for shifting at least one of said clamping means so as to clamp overlapped first and second thermoplastic web portions between a clamping means and said web shifting means, and

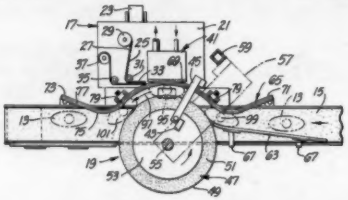
melting means which is capable of being passed through the overlapped portion of first and second thermoplastic web clamped between a respective clamping means and said web shifting means so as to sever each web and bond the severed ends of said first thermoplastic web to the severed ends of the second thermoplastic web to provide first and second seams.

4,201,621

LABEL APPLICATOR FOR IRREGULARLY SHAPED ARTICLES

Michael Crankshaw, Santa Fe Springs, and Leo Kucheck, Irvine, both of Calif., assignors to Label-Aire Inc., Fullerton, Calif.

Filed Aug. 3, 1978, Ser. No. 930,720
Int. Cl.[2] B65C *9/02, 9/06, 9/42*
U.S. Cl. 156—567 **16 Claims**



1. A label applicator for labeling articles which are moved along a path by a conveyor, said label applicator comprising:

a wheel having a peripheral surface, at least a portion of said peripheral surface being resiliently deformable;

means for mounting said wheel for rotation about a rotational axis which extends generally transverse to the direction of movement of the conveyor adjacent said wheel, said wheel lying at least partially in the path of the articles conveyed to the wheel by the conveyor;

motor means for rotating said wheel about said rotational axis;

guide means adjacent said peripheral surface of said wheel for urging articles conveyed to the peripheral surface of said wheel against the peripheral surface to resiliently deform the peripheral surface sufficiently to capture the article and hold the article in a predetermined orientation whereby the articles are captured between the guide means and the wheel and held in a predetermined orientation; and

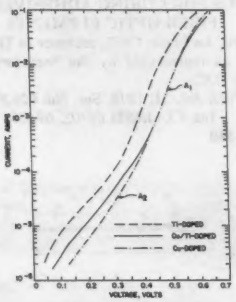
labeling means for applying a label to each of the articles when each of said articles is held in said predetermined orientation.

4,201,622

METHOD OF MITIGATING TITANIUM IMPURITIES EFFECTS IN P-TYPE SILICON MATERIAL FOR SOLAR CELLS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Amal M. Salama, Los Angeles, Calif.

Filed Jan. 31, 1979, Ser. No. 8,212
Int. Cl.[2] B01J *17/34*
U.S. Cl. 156—605 **2 Claims**



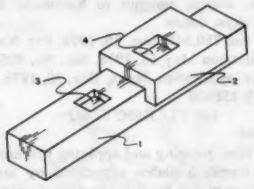
1. In the Czochralski single crystal growth process of silicon to be used for solar cells, wherein a known concentration of titanium impurities is present, the technique of adding to the silicon melt copper of at least the same concentration but not greater than 10^{16} atoms/cm^3, for mitigating the deleterious effects of the titanium impurities when the silicon crystal grown is used for solar cells.

4,201,623

METHOD FOR MAKING EPITAXIAL SILICON CRYSTALS WITH UNIFORM DOPING LEVELS

Barbara E. Sumner, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 23, 1978, Ser. No. 900,206
Int. Cl.[2] B01J *17/20, 17/24;* H01L *21/62*
U.S. Cl. 156—622 **3 Claims**



1. A method of making, in a refractory boat, an epitaxial silicon crystal layer on a silicon substrate, wherein said boat includes a base portion with a substrate cavity therein and a cover portion atop said base portion with a perforation therethrough, including the steps of:

loading said cavity with a first material consisting of said substrate;

loading said perforation with a second material consisting of a metal solvent;

placing said boat in a non-oxidizing atmosphere;

heating said boat to a first temperature;

relatively moving said base and said cover portions with respect to each other to place said cavity under said perforation whereby said solvent contacts said substrate;

raising said temperature at a controlled rate to a second temperature and holding for a first time whereby said substrate and said solvent diffuse into each other to form a saturated solution;

reducing said temperature at a controlled rate to a third temperature and holding for a second time whereby said solvent first reaches an equilibrium solution, then supersaturation, then precipitation;

relatively moving said base and said cover portions with respect to each other to remove said cavity from beneath said perforation.

cooling said boat to ambient; and

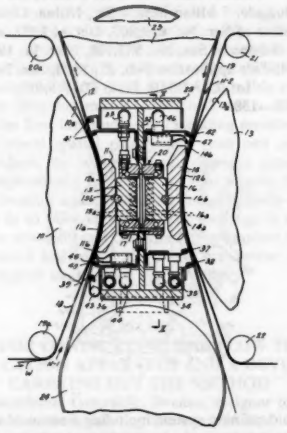
removing said boat from said non-oxidizing atmosphere, removing the substrate from said boat, and cleaning said substrate to remove any metal solvent on the surface thereof.

4,201,624

EXTENDED NIP PRESS

William C. Mohr, Rockford; Leroy H. Busker, Rockton; Carl J. Francik, Roscoe, all of Ill., and Jan I. Bergstrom, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Sep. 5, 1978, Ser. No. 939,449
Int. Cl.[2] D21F *3/04, 3/06*
U.S. Cl. 162—205 **17 Claims**



13. The method of removing liquid from a traveling fibrous web by applying pressing forces to the web comprising the steps:

passing a relatively wet web on a carrier felt through a first press nip formed between a pair of rolls;

immediately passing the web following the first nip through a second, elongate extended nip;

immediately after the second nip passing the web around a roller and through a third, elongate extended nip spaced from said second nip; and

simultaneously applying opposed pressures in said second and third nips from a force between the nips to different portions of said web respectively received in said second and third elongate nips with the pressure remaining substantially constant throughout each nip and releasing the pressure at the end of said nips,

whereby the force is such that any reaction forces are opposed.

4,201,625

PROCESS FOR PRODUCING ^{52}MANGANESE

Gerhard Erdtmann, Jülich; Chaturvedula Sastri, Berlin; Gottfried Kuppers, Heinsbert-Oberbruch, and Hermann Petri, Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Julich, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,139
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752165; Oct. 19, 1978, 2845457
Int. Cl.[2] G21G *1/10*
U.S. Cl. 176—11 **6 Claims**

1. A process for producing ^{52}Mn by nuclear reaction, comprising the steps of:

bombarding a vanadium-containing target with accelerated ^{3}helium ions, and

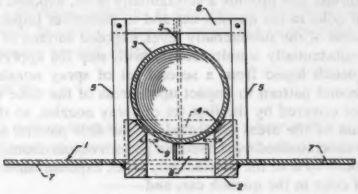
isolating the ^{52}manganese thereby produced from the other target constituents after the bombardment by means of a chemical separation procedure.

4,201,626

LIQUID-LIQUID CONTACTING APPARATUS

George Asdigian, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 24, 1978, Ser. No. 936,429
Int. Cl.[2] B01D *11/04;* C10G *21/00*
U.S. Cl. 196—14.52 **5 Claims**



1. A tray for use in a liquid-liquid contacting apparatus which comprises:

(a) a horizontal plate having a circular perforation;

(b) a cylindrical vertical collar mounted in said circular perforation by attachment to the horizontal plate and extending through said circular perforation, with an inwardly slanting circular valve seat contoured into an upper open end of the collar and with a vertical passageway extending through the collar from said circular valve seat to a lower open end of the collar;

(c) a plurality of spaced horizontal ducts extending radially through the wall of said collar and located at a point below said circular valve seat and exiting said collar at a point above said horizontal plate to provide high velocity streams of rising liquid which will agitate denser liquid retained upon the upper surface of said horizontal plate;

(d) a hollow imperforate sphere having a specific gravity greater than 1.0 and a diameter which provides a contacting surface matching the circular vlave seat of the collar, the sphere being positioned above the valve seat; and

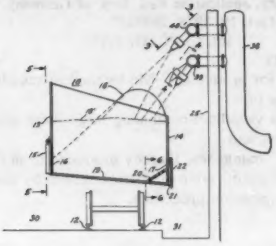
(e) a retention cage which encloses the sphere, the retention cage being connected to the collar and having an upper surface located a preset distance above the sphere when the sphere rests in the valve seat, with several openings being present in the retention cage, there being no opening in the retention cage large enough for the sphere to pass through.

4,201,627

COKE QUENCHING PRACTICE FOR ONE-SPOT CARS

David M. Chuss, and James W. Scheirer, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 15, 1979, Ser. No. 20,682
Int. Cl.[2] C10B *39/12, 39/04, 33/00*
U.S. Cl. 201—39 **12 Claims**



1. A process for quenching coke in which coke is pushed from a coke oven into a one-spot quench car to form a peak portion and the quench car is provided with openings adjacent the quench car bottom, comprising the steps of:

(a) providing a plurality of sets of full cone spray nozzles with each nozzle having a spray angle in the range of about 15° to about 25° to dispense a quench liquid in a full coverage spray pattern to quench the coke,

(b) applying the quench liquid from a first set of spray nozzles in a first pattern to initially impact upon the peak portion of the coke in the car to cause the peak portion to subside and provide a substantially level, exposed surface of coke in the quench car and to thereafter impact upon areas of the substantially level, exposed surface of coke,

(c) substantially simultaneously with step (b) applying the quench liquid from a second set of spray nozzles in a second pattern to impact upon areas of the coke surface not covered by the first set of spray nozzles, so that the sum of the areas contacted by the first pattern and the areas contacted by the second pattern equals about 50% to about 70% of the substantially level, exposed surface area of coke in the quench car, and

(d) providing sufficient openings to drain the quench liquid from the quench car and to prevent the buildup of quench liquid in the bottom of the quench car.

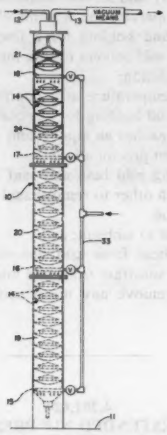
4,201,628

SEPARATION APPARATUS

Shirley L. Church, E. Amherst, and Loren M. Hilts, Niagara Falls, both of N.Y., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 7, 1977, Ser. No. 840,343
Int. Cl.[2] B01D *3/14, 3/24*
U.S. Cl. 202—158 **3 Claims**

1. An elongated closed column including a top section, a midsection and a bottom section, the top section including a vacuum means to remove gases from said section and a means to charge a feed onto the apex area of the top plate of the top plate assembly, said bottom section including a means for removing the treated feed from said column, the midsection containing a series of plate assemblies positioned in a one-above-another relationship to control the distribution and rate of flow of the feed from the top section to the bottom section of the column, each of said plate assemblies comprising a support means positioned between a top cone plate and a lower conical plate to support said plates a predetermined distance apart, said top cone plate being positioned a predetermined distance from the sidewalls of said column and sloping upward from its outer periphery to position the apex of said plate in the center line of said column, said lower conical plate being attached in a supported relationship to the sidewall of said column and sloping downward continuously from the sidewall to terminate in an opening in the center of said column, a gasket



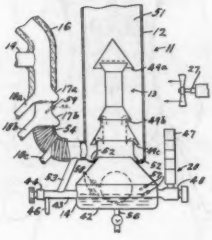
means to form a liquid tight seal between the sidewalls and the outer edge of said conical plate.

4,201,629

FLUID REFINING APPARATUS

Alvin E. Buggele, 7 Milan Manor Dr., Milan, Ohio 44846

Continuation of Ser. No. 619,807, Oct. 6, 1975, abandoned, which is a division of Ser. No. 522,708, Nov. 11, 1974, Pat. No. 3,923,424. This application Feb. 27, 1978, Ser. No. 881,659
Int. Cl.[2] B01D *3/14;* **F04F** *9/00*
U.S. Cl. 202—158 **9 Claims**



1. In a fluid refining system including a series of evaporation vessels adapted to contain a body of liquid defining an evaporative surface, a first of such evaporative vessels comprising, a boiler for initially heating an incoming feed liquid and the remaining evaporative vessels comprising a series of distillation plates within a fractionating column in communication with the effluent end of the boiler, at least one of said distillation plates having collecting means to collect a body of liquid, the improvement comprising at least one first conduit means for providing communication between said collecting means at the level of the evaporative surface thereof and the exterior of the fractionating column, means for maintaining said first conduit means at a pressure lower than that of said evaporative vessel, a valve in said first conduit means, and second conduit means providing communication between said collecting means at a vertically discrete location below said first conduit means and the exterior of the fractionating column for withdrawing collected liquid fractions from said one of said distillation plates whereby areas of the evaporative surface which

impede evaporation of the liquid may be removed from the evaporative surface by the periodic opening of said valve and liquid fractions may be removed from the fractionating column through said second conduit means.

4,201,630

CLEANING COKE OVEN DOORS OR DOOR JAMBS

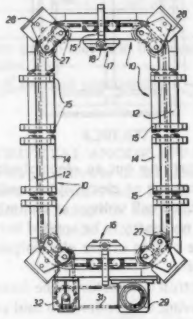
Eric A. Hyde, Bromley, England, assignor to British Steel Corporation, London, England

Filed Jul. 28, 1978, Ser. No. 928,920

Claims priority, application United Kingdom, Aug. 5, 1977, 32913/77

Int. Cl.² C10B *43/08*

U.S. Cl. 202—241 **7 Claims**



1. A cleaning machine for a vertical coke oven door or door jamb having a peripheral sealing surface, said machine including means for directing a high pressure water jet on to the peripheral sealing surface to remove tarry deposits from the exposed sealing surface, a multi-wheeled movable carriage to which the jet directing means is attached, and a closed track which includes four longitudinally extending members held in fixed quadrilateral spatial relationship with one another by support members, the wheels of said carriage comprising at least two longitudinally spaced sets of four wheels, the wheels of each set bearing against separate longitudinally extending members so as to positively orient the carriage in relation to said members whereby said carriage is free to move only along said closed track and lateral and tilting movement of the carriage with respect to the track is prevented.

4,201,631

METHOD FOR CONTROLLING THE FLOW THROUGH A DISTILLATION APPARATUS AND A DEVICE FOR CARRYING OUT THE METHOD

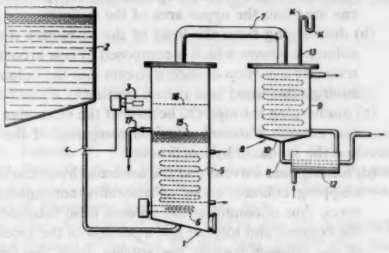
Berth U. Gustafsson, Österskär, Sweden, assignor to Projectus Industriprodukter Aktiebolag, Bromma, Sweden

Filed Jun. 6, 1978, Ser. No. 913,218

Int. Cl.² B01D *3/42*

U.S. Cl. 203—1 **7 Claims**

1. A method for controlling the flow through a distillation system including a boiling vessel containing a liquid mixture, a condensing vessel and a refrigeration circuit provided with a compressor means and containing a refrigeration medium, said refrigeration circuit being operatively associated with said boiling vessel and said condensing vessel, wherein a substance is separated from said liquid mixture which has a boiling point and density dependent upon the contents of said substance in said liquid mixture, which comprises introducing fresh liquid mixture into the boiling vessel in response to the liquid level in the boiling vessel, and removing a liquid enriched in said substance in a controlled manner from the boiling vessel in response to the pressure of the refrigeration medium, which increases in accordance with an increase in the distillation temperature, wherein the heat emitted upon the condensation of the distillate in the condenser vessel is transferred to the refrigeration medium in the refrigeration circuit and the refrig-



eration medium is returned by additional compressor work of said compressor to the boiling vessel where said heat is transferred to the liquid mixture.

4,201,632

SEPARATION OF PHENOL-, CYCLOHEXANONE-, AND CYCLOHEXYLBENZENE-CONTAINING MIXTURES EMPLOYING A NITRILE AS EXTRACTION DISTILLATION SOLVENT

Timothy P. Murtha, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 20, 1978, Ser. No. 971,169

Int. Cl.² B01D *3/40*; C07C *37/22, 45/24*

U.S. Cl. 203—51 **7 Claims**

1. An extractive distillation of a mixture containing phenol and cyclohexanone, which mixture may also contain cyclohexylbenzene, which comprises distilling said mixture in the presence of a solvent comprising at least one nitrile which contains up to about 30 carbon atoms and which can be represented by the following general formula:

$$R(CN)_m$$

wherein m is an integer from 1 to 4 and wherein R is selected from a group consisting of hydrocarbyl and substituted hydrocarbyl radicals.

4,201,633

SEPARATING AROMATIC HYDROCARBONS FROM MIXTURES CONTAINING THEM

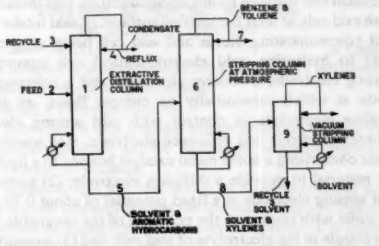
Giancarlo Paret; Alessandro Vetere, both of Milan, and Giuseppe Iori, San Donato Milanese, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed May 9, 1978, Ser. No. 904,270

Claims priority, application Italy, May 12, 1977, 23474 A/77

Int. Cl.² B01D *3/40*; C07C *7/08*

U.S. Cl. 203—58 **2 Claims**



1. A method for the separation of aromatic hydrocarbons from mixtures containing them, comprising the steps of:

(a) feeding the charge, which contains aromatic hydrocarbons, including benzene, toluene and xylenes to be separated, into the half-way section of an extractive distillation column, and a solvent compound of N,N[1]-dimethyl ethylene urea into the upper area of the column,

(b) discharging from the head of the extractive distillation column a stream which is composed of non-aromatics and refluxing a portion of such a stream into the column, after having condensed said stream portion,

(c) discharging through the bottom of the extractive distillation column a stream which is composed of the solvent and the aromatic hydrocarbons,

(d) feeding said solvent and the aromatic hydrocarbons to a stripping column, under substantially atmospheric pressures, thus obtaining at the column head substantially all the benzene and toluene and a portion of the xylenes and, at the column bottom the solvent with the remaining portion of the xylenes, and

(e) feeding said solvent with the xylenes to a vacuum stripping column under a pressure of from 0.10 to 0.050 atm. the xylenes being separated at the head and the solvent at the bottom, such solvent being recycled to the extractive distillation column.

4,201,634

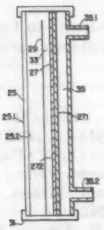
METHOD FOR THE DETECTION OF HYDRAZINE

Joseph R. Stetter, Peekskill, N.Y., assignor to Energetics Science, Inc., Elmsford, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,296

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—1 T **4 Claims**



1. A method for electrochemically detecting a hydrazine gas which comprises the steps of (1) feeding a gaseous sample containing said gas from an intake means to a sensing electrochemical cell through means communicating said intake means with said cell, at least the internal surfaces of said intake means, said communicating means and said cell being of a material inert to hydrazine, said electrochemical cell comprising a sensing electrode, a counter electrode, and a reference electrode at which substantially no current flows, an aqueous alkaline electrolyte in contact with said sensing electrode, counter electrode and reference electrode, said sensing electrode comprising a noble metal catalyst bonded to a hydrophobic material to provide a diffusion electrode; (2) maintaining said sensing electrode at a fixed potential of about 0.70 volt to 1.4 volts with respect to the potential of the reversible hydrogen couple in the electrolyte of said cell; and (3) measuring the current flowing between said sensing electrode and counter electrode of said cell to quantitatively determine the amount of said hydrazine gas in said gaseous sample.

4,201,635

METHOD AND APPARATUS FOR CARRYING OUT AN ELECTROLYSIS PROCESS

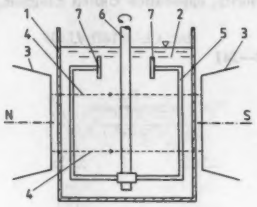
Klaus Muller, Baden, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Dec. 5, 1978, Ser. No. 966,659

Claims priority, application Switzerland, Dec. 21, 1977, 15757/77

Int. Cl.[2] C25B *15/00*; C25C *7/00*; C25D *21/00*; C25F *7/00*

U.S. Cl. 204—1 R **31 Claims**



1. A method of carrying out an electrolysis process in an electrolytic cell containing an electrolytic medium by the use of electromotive induced cell voltage as the only source of the cell voltage which is necessary to be applied between an anode and a cathode of the cell to create electrolysis, said method including the steps of:

placing a solid electron conductor in the form of a conducting body and having electrodes into said cell;

passing a magnetic field transversely through said cell;

and varying the part of said magnetic field which is acting upon said electron conductor;

whereby a voltage is induced in said electrodes.

17. An apparatus for carrying out an electrolytic process, said apparatus comprising:

an electrolysis receptacle adapted to contain an electrolytic medium;

at least one electron conductor in said receptacle, each said conductor comprising a conducting body and including at least one anode and at least one cathode;

at least one magnet body adapted to produce a magnetic field within said receptacle; and

means for varying said magnetic field with respect to said electron conductor.

4,201,636

ELECTROCHEMICAL DESTRUCTION OF STABLE COMPLEXES

John J. MacGregor, Reading, England, assignor to Matthey Rustenburg Refiners (Pty) Limited, Johannesburg, South Africa

Continuation-in-part of Ser. No. 942,814, Sep. 15, 1978, which is a continuation of Ser. No. 815,005, Sep. 12, 1977, Pat. No. 4,127,458. This application Apr. 19, 1979, Ser. No. 31,605

Claims priority, application United Kingdom, Jul. 13, 1976, 29093/76; Oct. 12, 1978, 42108/78

Int. Cl.[2] C25C *1/20*

U.S. Cl. 204—109 **8 Claims**

1. A process for recovering platinum group metal present as a stable complex in an aqueous effluent, the process comprising the steps of:

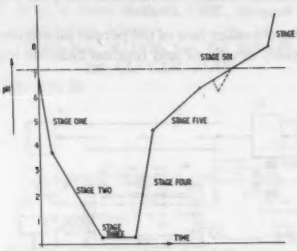
(a) adjusting the pH of the effluent as necessary to a pH of 6±0.5;

(b) removing by filtration a substantial quantity of the base and amphoteric metals from the so-treated effluent of step (a);

(c) heating the filtrate from step (b) to a temperature in the region of 70° C.;

(d) electrolysing the heated filtrate of step (c) at a substan-

tially constant temperature maintained at least at 70° C. so as to destroy the stable complexes and thereby precipitate



the platinum group metals in the form of hydrated oxides or hydroxides, and

(e) filtering-off the said precipitate.

4,201,637

SACRIFICIAL ANODE APPARATUS

Marvin L. Peterson, and Orwin G. Maxson, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Nov. 15, 1978, Ser. No. 960,904

Int. Cl.[2] C23F *13/00*

U.S. Cl. 204—148 **9 Claims**

1. A sacrificial anode apparatus for use on a steel offshore platform, said apparatus comprising:

(a) a perforated container for anode material, at least a portion of said container being of electrically conductive material, said container being electrically connected to the steel structure of said offshore platform and being under the surface of the water,

(b) particulate anode material in said container, and

(c) tubing connected to said container and extending to a source of supply for conveying said anode material to said container.

4,201,638

TRIPLE IONS OF 1,2- AND 1,4-DICARBONYL COMPOUNDS AND ANALOGS THEREOF CONTAINING NITROGEN AND CONTAINING TWO STRATEGIC OXYGEN OR NITROGEN GROUPS AND PROCESS FOR PRODUCING SAME

Jeffrey K. S. Wan, Kingston, and Kuang S. Chen, Amherstview, both of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Filed Sep. 25, 1978, Ser. No. 945,627

Int. Cl.[2] B01J *1/10, 1/12;* C07G *13/00;* C07C *107/02*

U.S. Cl. 204—158 R **6 Claims**

1. A stable, paramagnetic alkali radical triple cationic ion of a compound selected from the group consisting of furil, pyridil, di-tert-butylazodicarboxylate, anthraquinone, quinizarin, duroquinone, pyrazine, tetramethyl pyrazine, tetracyanoquinodimethane, and tetracyanoethylene.

3. A process for producing stable paramagnetic alkali radical cationic triple ions of a compound selected from the group consisting of furil, pyridil, di-tert-butylazodicarboxylate, anthraquinone, quinizarin, duroquinone, pyrazine, tetramethyl pyrazine, tetracyanoquinodimethane, and tetracyanoethylene comprising mixing said compound with an alkali tetraphenylborate in an organic solvent therefor and irradiating the resultant mixture with radiations in the range between about 300 and 500 Nm.

4,201,639

PROCESSES FOR PREPARING CYCLOHEXADIENE DERIVATIVES

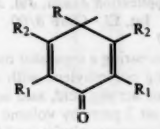
Kenneth K. Light, Long Branch; Bette M. Spencer, Ocean Grove; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Manfred H. Vock, Locust, N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 860,121, Dec. 13, 1977, Pat. No. 4,154,763, which is a division of Ser. No. 774,058, Mar. 3, 1977, Pat. No. 4,076,854. This application Feb. 2, 1979, Ser. No. 8,886

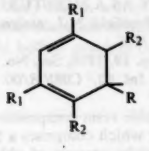
Int. Cl.[2] B01J *1/10;* C07C *45/00*

U.S. Cl. 204—158 R **2 Claims**

1. The process for preparing the compound having the structure:



wherein R is one of C_1–C_5 alkyl, R_1 is methyl when R_2 is hydrogen, and R_1 is hydrogen when R_2 is methyl, comprising the step of insufflating a composition consisting essentially of a compound having the structure:



with oxygen in the presence of ultraviolet light, a basic catalyst and a rose bengal sensitizer.

4,201,640

METHOD FOR PRODUCING BIS-[4-(DIPHENYLSULFONIO)PHENYL] SULFIDE BIS-M.X_6 INITIATOR AND METHOD FOR CATIONIC POLYMERIZATION OF MONOMER FORMULATIONS USING SAME

William R. Watt, Princeton Junction, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 14, 1979, Ser. No. 20,340

Int. Cl.[2] C08F *2/46, 4/00*

U.S. Cl. 204—159.11 **8 Claims**

1. In a method of polymerization of a cationically polymerizable monomer, the steps comprising:

A. making a photoinitiator by:

(1) providing a first reactant comprising bis-[4-(diphenylsulfonio)phenyl] sulfide bis-halide wherein halide is chloride or bromide;

(2) admixing said first reactant in an aqueous solution with a second reactant having the formula $T.MF_6$ wherein M is one of phosphorus, antimony or arsenic, T is hydrogen or a metal whose halide salt is water soluble, said reactants reacting to produce a precipitate including bis-[4-(diphenylsulfonio) phenyl] sulfide bis-MF_6;

(3) recovering said precipitate; and

(4) drying said precipitate at a temperature below about 50° C. for at least an initial period to dewater said precipitate and recover a frangible product containing at least 50 percent by weight bis-[4-(diphenylsulfonio) phenyl] sulfide bis-MF_6 based upon solids, said product comprising a photoinitiator;

B. admixing said photoinitiator with a cationically polymerizable monomer formulation in an amount equal to 0.5–6.0 percent by weight of the monomer therein; and

C. exposing said admixture to a source of electromagnetic radiation to decompose said photoinitiator and produce a Lewis acid to initiate polymerization of said polymerizable monomer.

4,201,641

RADIATION GRAFTING PROCESS FOR PREPARING A MEMBRANE FOR BATTERY SEPARATOR

Masao Gotoda, Takasaki; Toshio Okada, Kadoma; Kazuo Murata, Takatsuki, and Kusuhiko Takahashi, Tokyo, all of Japan, assignors to Japan Atomic Energy Research Institute; Toshiba Ray-O-Vak K.K., both of Tokyo and Yuasa Battery Co., Ltd., Osaka, all of, Japan

Filed Jul. 21, 1978, Ser. No. 926,923

Claims priority, application Japan, Jul. 26, 1977, 52/89653

Int. Cl.[2] C08F *8/00*

U.S. Cl. 204—159.17 **10 Claims**

1. A process for preparing a separator membrane for battery comprising contacting polyethylene with an aqueous solution of 30–80% by volume acrylic acid, said aqueous solution further containing at least 3 parts by volume of ethylene dichloride per 100 parts of aqueous solution and 0.001 to 0.1 mole of ferrous salt or cupric salt per liter of the total solution; and then irradiating with ionizing radiation of 0.01 to 2 Mrad.

4,201,642

RADIATION-CURABLE COATING COMPOSITION HAVING UTILITY AS A MOISTURE BARRIER FILM

Michael T. Nowak, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sep. 19, 1978, Ser. No. 944,034

Int. Cl.[2] C08F *8/00*

U.S. Cl. 204—159.17 **10 Claims**

1. A radiation-curable resin composition having utility as a moisture barrier film which comprises a blend of (1) between about 10 and 30 weight percent of chlorinated rubber; (2) between about 2 and 25 weight percent of chlorinated paraffin; (3) between about 15 and 45 weight percent of vinyl alkanoate; (4) between about 10 and 40 weight percent of crosslinking monomer containing at least two polymerizable olefinically unsaturated groups; (5) between about 0.5 and 15 weight percent of photoinitiator; and (6) between about 0.5 and 5 weight percent of stabilizer, based on the total composition weight.

4,201,643

ANALYTICAL APPARATUS

David J. Holman, Blandford Forum, and Howard James, Dorchester, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 707,078, Jul. 20, 1976, abandoned, which is a division of Ser. No. 583,900, Jun. 5, 1975, Pat. No. 4,025,308. This application Mar. 29, 1978, Ser. No. 891,454

Claims priority, application United Kingdom, Jun. 7, 1974, 25458/74

Int. Cl.[2] B01D *13/02*

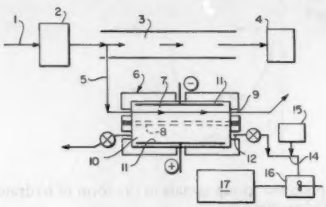
U.S. Cl. 204—180 R **5 Claims**

1. A method of reducing the amount of residual chloride ions in water after said water has previously been treated to remove the bulk of said ions, the method comprising,

(a) passing said treated water through a compartment of an electrolytic cell;

(b) presenting said treated water within the cell to one face of a porous non-ion selective membrane comprising a cellulose ester having pores of about 0.45 micrometers diameter and a thickness of about 150 micrometers to inhibit retention of said chloride ions in said pores so that to a substantial extent chloride ions can pass through said pores;

(c) exposing the other face of the porous membrane to water substantially devoid of said residual chloride ions, and



(d) simultaneously polarising the elctrolytic cell with a direct current supply of about 100 volts in a manner to attract anions and thereby the chloride ions from the treated water through the pores of the membrane and into the water substantially devoid of said chloride ions.

4,201,644

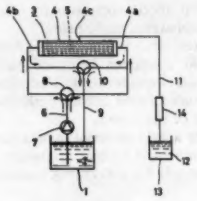
REPLENISHMENT OF ELECTRODEPOSITION COATING BATH

Nobuaki Todoroki, Warabi; Junichi Yasukawa, Chigasaki; Norio Kawamura, Kawagoe; Akio Kasai, Sayama; Satoru Kamiyama, and Toshihiro Kawasaki, both of Tokyo, all of Japan, assignors to Shinto Paint Co., Ltd., Amagasaki; Honda Motor Co., Ltd. and Taikisha Ltd., both of Tokyo, all of, Japan

Filed Sep. 29, 1978, Ser. No. 946,956

Int. Cl.[2] C25D *13/24*

U.S. Cl. 204—181 C **2 Claims**

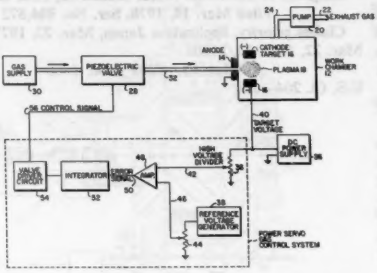


1. A method for replenishing an electrodeposition coating liquid bath which comprises subjecting to ultrafiltration, in an ultrafiltration apparatus, an electrodeposition bath liquid which has been decomposed with time, said bath containing, as essential components, a water thinnable cationic binder resin which is a nitrogen atom containing a basic resin neutralized at least partially with an acid compound and at least one nonionic resin in the form of a powder which is solid at room temperature, but which can melt when heated to form a film, said ultrafiltration being carried out under a pressure of 0.2–3.0 kg/cm^2; changing the direction of the bath liquid during the ultrafiltration step so as to cause the liquid to flow in opposite directions in the ultrafiltration apparatus for the purpose of preventing the clogging of the apparatus; recycling the concentrates obtained from the ultrafiltration to the electrodeposition coating bath to adjust the liquid characteristics of the bath and using filtrates obtained from the ultrafiltration step as a diluent for preparing a replenishing supply liquid and adding the thus-prepared replenishing supply liquid to the electrodeposition coating bath.

4,201,645
CLOSED-LOOP SPUTTERING SYSTEM AND METHOD OF OPERATING SAME

Richard P. Riegert, Santa Barbara, Calif., assignor to Robert J. Ferran, Framingham, Mass.

Filed Jun. 26, 1978, Ser. No. 919,435
Int. Cl.[2] C23C 15/00
U.S. Cl. 204—192 R **16 Claims**



1. A closed-loop sputtering system for the deposition of a thin film of material from a target cathode onto a substrate, which system comprises in combination:

(a) a D.C. power source to apply a constant current or voltage;

(b) a sputtering work chamber containing therein a target cathode, a substrate and an anode, the electrodes spaced apart and adapted to form in operation a plasma of an ionized gas therebetween;

(c) a means to maintain the work chamber under a vacuum and to discharge exhaust gas from the work chamber in operation;

(d) a source of gas for use in forming the plasma;

(e) gas conduit means to conduct the gas from said source to the work chamber to form the plasma;

(f) electrically controlled gas-flow valve means in the conduit means, the valve means to control the flow of gas therethrough in proportion to the application of an electrical error signal to the valve means;

(g) first electrical-communication means to provide for electrical communication between the D.C. power source and the cathode, so as to provide a constant current or voltage to the target cathode; and

(h) control means in direct nonbiased electrical communication with the target cathode and with the gas-flow valve means, said control means comparing the target voltage or current signal which varies with the ionization level of the plasma in the work chamber with a reference voltage or current signal and generating a differential electrical-error-control signal to control and drive the valve means, whereby the ionization level of the plasma is controlled by variations in the flow of gas without the necessity of a pressure-sensing device in the work chamber.

4,201,646
APPARATUS FOR STRIPPING VOLTAMMETRY

Wayne R. Matson, Ayer, Mass., assignor to Environmental Sciences Associates, Inc., Bedford, Mass.

Continuation of Ser. No. 643,295, Dec. 22, 1975, abandoned, which is a continuation of Ser. No. 447,376, Mar. 1, 1974, abandoned. This application Nov. 30, 1977, Ser. No. 856,086
Int. Cl.[2] G01N 27/48
U.S. Cl. 204—195 H **18 Claims**

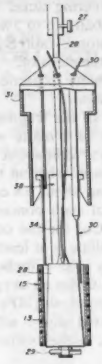
1. An electrode assembly for stripping voltammetry analysis of a sample solution, and comprising in combination:

an enclosure for holding a volume of said sample solution,

a counter electrode located in said enclosure for contacting said sample solution;

a working electrode located in said enclosure for contacting said sample solution, said working electrode being in the form of an axially hollow electrode body having a metal active electrode surface formed on the interior surface thereof;

and rotatable stirring means (i) extending into the hollow of said electrode body, closely spaced (a) from the interior surface of said hollow and (b) from said counter electrode, and (ii) adapted to produce flow of said sample solution across said active electrode surface, said electrode assembly being dimensioned so that the ratio of surface area of said active electrode surface to sample volume is at least 3 cm^2/ml.



2. An electrode combination according to claim 1, wherein said working electrode comprises a hollow graphite body.

3. An electrode combination according to claim 2, wherein said hollow graphite body has an active electrode surface in the form of a multiplicity of islands of mercury formed on the interior surface of said hollow graphite body.

4,201,647
MEASURING ELECTRODES AND PROCESS

Placido M. Spaziante, Lugano, Switzerland; Luigi Giuffre, and Giovanni Modica, both of Milan, Italy, assignors to Panclor S.A., Taverne, Switzerland

Filed May 22, 1978, Ser. No. 908,262
Claims priority, application Switzerland, Jun. 8, 1977, 7089/77
Int. Cl.[2] G01N 27/30, 27/46
U.S. Cl. 204—195 F **13 Claims**

1. A measuring electrode comprised of a body provided with an outer surface comprised of graphite or carbon black dispersed in a chemically inert matrix, said electrode being preactivated by anodic polarization in an aqueous acidic or basic solution.

4,201,648
NICKEL RECOVERY FROM SULFUR-DEFICIENT MATTES

Kojur N. Subramanian, East Hanover, N.J.; Norman C. Nissen, Oakville, and John A. Thomas, Norval, both of Canada, assignors to The International Nickel Co., Inc., New York, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,448
Claims priority, application Canada, Apr. 12, 1978, 301006
Int. Cl.[2] C25C *1/08*
U.S. Cl. 204—112 8 Claims

1. A process for recovering nickel from a nickel matte which contains up to 15% cobalt, up to 5% copper, and sulfur in an amount such that the atomic ratio S:[Ni+Co+Cu] is less that about 0.7, comprising the steps of:

(i) fragmenting the matte to particles smaller than about 75 microns (μm) diameter;

(ii) forming a slurry of the fragmented matte in a medium which in the case of a matte wherein the atomic ratio S:[Ni+Co+Cu] is at least about 0.4 comprises water, and in the case of a matte wherein the atomic ratio S:[Ni+-Co+Cu] is less than about 0.4 comprises a nickel sulfate aqueous solution of such concentration that the atomic ratio S:[Ni+Co+Cu] for the combination of matte and dissolved nickel sulfate is at least about 0.4;

(iii) heating the slurry in an autoclave at a temperature of at least about 140° C. under an oxygen partial pressure of at least about 0.1 megapascals (MPa), and withdrawing from the autoclave reacted slurry wherein the solids consist essentially of basic nickel sulfate and leach residue of unreacted matte;

(iv) treating the reacted slurry at a temperature of at least about 60° C. with lime to raise the pH to at least about 9.0 while agitating midly to convert nickel in the slurry to fine particles of nickel hydroxide and precipitate large crystals of calcium sulfate;

(v) subjecting the lime-treated slurry to a physical separation effective to separate therefrom the slurry liquor and a coarse solids fraction, thereby isolating a fine solids fraction which comprises essentially the nickel hydroxide and matte residue;

(vi) treating the fine fraction isolated in step (v) with spent sulfate electrolyte from a nickel electrowinning operation to dissolve the nickel hydroxide;

(vii) separating the matte residue from th solution obtained in step (vi); and

(viii) subjecting the nickel sulfate solution separated in step (vii) to purification and thereafter to electrowinning to recover pure nickel therefrom.

4,201,649
LOW RESISTANCE INDIUM OXIDE COATINGS

F. Howard Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 29, 1978, Ser. No. 964,765
Int. Cl.[2] C23C *15/00*
U.S. Cl. 204—192 P 4 Claims

1. In a method for depositing a transparent electroconductive coating consisting essentially of the oxide of at least one metal having an atomic number between 48 and 51 comprising the steps of supporting a substate in an atmosphere comprising an inert gas and sufficient oxygen to effect oxide formation at a pressure of less than about 10^{-1} Torr, heating the substrate, and cathode sputtering a metallic target to deposit said oxide onto said substrate until a coating of desired thickness is formed, the improvement which comprises carrying out the cathode sputtering in at least two steps at substantially different temperatures whereby

a. a thin layer of oxide constituting the minor portion of the final oxide layer is deposited at a temperature of T_1;

b. the deposition is interrupted while the substrate is heated; and

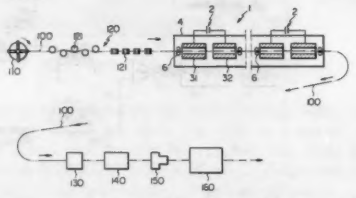
c. subsequently, the major portion of the final oxide layer is deposited at a temperature T_2

wherein T_1 which is less than about 200° F. (about 94° C.) is substantially lower than T_2 which is at least about 400° F. (about 204° C.).

4,201,650
APPARATUS FOR CONTINUOUS ELECTROLYTIC DESCALING OF STEEL WIRE WITH MILL SCALES

Hiroo Nagano; Takashi Fukuda, both of Kobe; Hiroshi Nagai, and Yasuyuki Nakamura, both of Amagaski, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 14, 1978, Ser. No. 886,572
Claims priority, application Japan, Mar. 22, 1977, 52/31901; Mar. 22, 1977, 52/31902
Int. Cl.[2] C25F *7/00, 1/00*
U.S. Cl. 204—209 3 Claims



1. An apparatus for continuous electrolytic descaling of mill scales from a steel wire by induced current flow, said apparatus comprising:

roller bender means having a plurality of rolls for reversely bending a wire for at least two cycles of bending for cracking scales on the wire and for drawing the wire for elongating it from 1–20%;

an electrolytic cell adjacent said roller bender means for receiving wire from said roller bender means, said electrolytic cell having a wire inlet therein adjacent said roller bender means and a wire outlet spaced from said wire inlet;

an electrolytic descaling solution in said electrolytic cell;

guide rollers of electrically insulating material within said electrolytic cell for guiding the wire along a line within said cell;

auxiliary cells at said wire inlet and said wire outlet of said electrolytic cell for receiving electrolytic solution leaking through said wire inlet and outlet;

a source of direct electric current;

a plurality of pairs of electrodes in said cell aligned along said line, said electrodes surrounding and being spaced from the wire being guided along said line, one electrode of each pair of electrodes being connected to the anode of said direct current source and the other electrode of each pair being connected to the cathode of said direct current source; and

means connected to said electrolytic cell for circulating the electrolytic solution into each of said electrodes at a predetermined rate.

4,201,651
ELECTROLYSIS CELL

Constantinos D. Themy, 4984 S. 360 West, Murray, Utah 84106

Filed Dec. 15, 1978, Ser. No. 969,845
Int. Cl.[2] C25B *9/00, 11/02, 15/08*
U.S. Cl. 204—217 7 Claims

1. An electrolysis cell, comprising:

an outer electrode having an in-facing surface which falls generally on a first cylindrical surface;

an inner generally coaxial electrode having an out-facing surface which falls generally on a second cylindrical surface, said second cylindrical surface falling inward radially of said first cylindrical surface, said outer and inner electrodes being longitudinally co-extensive for at least a substantial portion thereof;

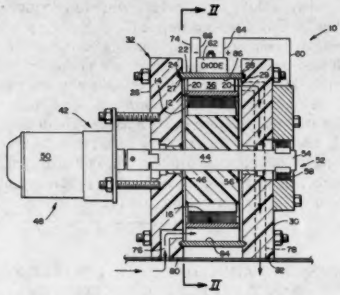
means for relatively rotating said inner and outer electrodes;

an abrading structure having an abrasive portion;

means for mounting said abrading structure to a respective one of said electrodes and with said abrasive portion thereof in abrasive contact with a respective other of said electrodes;

means for electrically insulating said abrasive portion from at least one of said electrodes;

means, independent of said abrading structure and carried by



either said respective one or said respective other of said electrodes, for mechanically motivating fluid in said cavity to flow axially relative to said electrodes in the space therebetween; and

means for supporting said electrodes in electrically insulating relation relative to one another and for defining a cell cavity about said electrodes.

4,201,652

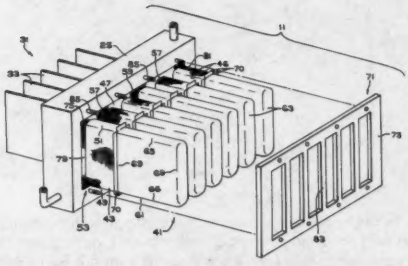
ELECTROLYTIC CELL MEMBRANE SEALING MEANS

Dallas D. Dupre, III, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 22, 1978, Ser. No. 963,246

Int. Cl.[2] C25B *9/00, 11/02, 11/04, 13/08*

U.S. Cl. 204—258 **9 Claims**



1. In an electrolytic cell having an electrode assembly comprising a base plate; fingered electrodes electrically connected to, spaced from, and extending perpendicularly outwardly from said base plate and defining valleys between a pair of adjacent fingered electrodes; a back screen spaced from and substantially parallel to said back plate, and interposed between said fingered electrodes and said backplate, said fingered electrodes having a top edge and a bottom edge extending from said backscreen, a leading edge remote from said backscreen, and a trailing edge adjacent said backscreen; said fingered electrodes bearing synthetic separators thereon; said synthetic separator being closed at the edges corresponding to the top, bottom, and leading edge of the fingered electrodes and open at the edge corresponding to the trailing edge thereof, with laps of synthetic separator material extending therefrom along said backscreen; and compressive means for sealing the laps of said synthetic separators, joined to the electrode assembly and bearing upon said electrode assembly and the laps of said synthetic separator material at the base of the electrode fingers between a pair of adjacent electrode fingers; the improvement wherein said compressive means comprises a frame bearing upon said backscreen and corresponding to the top and bottom of said electrode fingers and bearing means depending from said frame at the top of the electrode fingers to the frame at the bottom of the electrode fingers, and bearing upon said laps of synthetic separator material and said backscreen in the valleys between individual adjacent electrodes.

4,201,653

ELECTROWINNING CELL WITH BAGGED ANODE

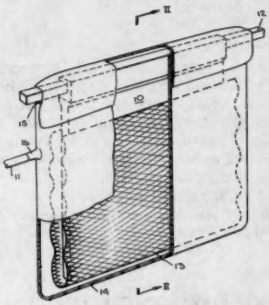
Charles E. O'Neill; Victor A. Ettel, both of Mississauga; Alfredo Villazor, Fonthill, and Peter G. Garritsen, Welland, all of Canada, assignors to Inco Limited, Toronto, Canada

Filed Jul. 27, 1978, Ser. No. 928,687

Claims priority, application Canada, Oct. 11, 1977, 288455

Int. Cl.[2] C25C *7/04, 7/00*

U.S. Cl. 204—263 **1 Claim**



1. A cell for electrowinning a metal from a sulfate electrolyte comprising a housing within which are located a plurality of anodes insoluble in the electrolyte and a plurality of cathodes insoluble in the electrolyte and interleaved between the anodes, wherein the improvement comprises; a plurality of flaccid sheaths each of which comprises a sleeve-shaped porous membrane which is positioned relative to a respective one of the anodes to envelop at least the portion thereof which in operation is immersed in the electrolyte; spacing means interposed between each sheath and the surfaces of its respective anode to maintain a spacing therebetween, thereby defining an anolyte compartment; means for feeding electrolyte into the cell volume between the anolyte compartments and withdrawing electrolyte from within the anolyte compartments, whereby in operation an electrolyte flow is maintained through the sheaths into the anolyte compartments, and a plurality of hood means each of which envelops the portion of a respective anode which is unsubmerged in operation; each hood means being sealed at the lower edge thereof to a respective sheath and having an aperture located slightly below the level at which electrolyte is maintained in operation whereby electrolyte and oxygen can be extracted from the anolyte compartment through said aperture.

4,201,654

ANODE ASSISTED SPUTTER ETCH AND DEPOSITION APPARATUS

B. Wayne Castleman, Kenneth City, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

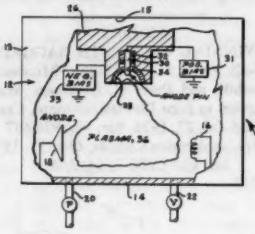
Filed Oct. 6, 1978, Ser. No. 949,167

Int. Cl.[2] C23C *15/00*

U.S. Cl. 204—298 **9 Claims**

1. An anode assisted sputter etch apparatus comprising a

housing, said housing forming a chamber therein, means located within said chamber for holding an article to be sputter etched, said holding means having a concave spherical configuration, said concave spherical configuration matingly engaging said article, means for introducing an ionizable gas into said chamber, means located within said chamber on one side of said holding means for producing electrons, a first anode located within said chamber on the other side of said holding means, means for providing a negative potential to said article,



and a second anode located within said chamber being centrally located within said concave spherical configuration of said holding means adjacent said article and intermediate said first anode and said electron producing means whereby a plasma is formed between said electron producing means and said first and second anodes, said plasma adjacent said second anode being capable of desorbing gases and other absorbed vapors from the surface of said article while positive ions from said plasma bombard said article surface with sufficient energy to eject material therefrom.

4,201,655

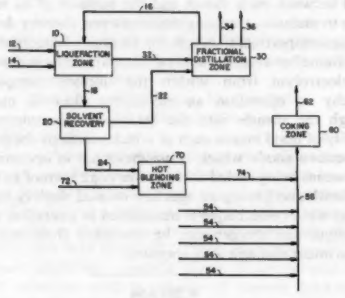
PROCESS FOR MAKING METALLURGICAL COKE

Frank W. Theodore, Pittsburgh; George E. Wasson, Eighty-Four; William A. Jasulaitis, Wayne, all of Pa., and Everett Gorin, San Rafael, Calif., assignors to Continental Oil Company, Stamford, Conn.

Continuation-in-part of Ser. No. 857,155, Dec. 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 751,621, Dec. 17, 1976, abandoned. This application Dec. 18, 1978, Ser. No. 970,845

Int. Cl.[2] C10B *53/00*; C10G *1/06*

U.S. Cl. 208—8 LE **5 Claims**



1. In a process for producing coke from coal, said process consisting essentially of:

(a) subjecting said coal to solvent extraction in a coal liquefaction zone to yield an effluent slurry consisting essentially of coal extract, solvent and undissolved coal;

(b) subjecting said effluent slurry to distillation in a solvent recovery zone to remove said solvent and produce a bottoms product consisting essentially of non-distillable coal extract, undissolved coal and residual solvent, said bottoms product being flowable at temperatures between 175° C. and below its carbonizing temperature and solidifiable at lower temperatures; and

(c) adding said bottoms product to coaly solids said coaly solids being selected from the group consisting of coals, char, semi-coke and coke to produce a blend of said coaly solids with said bottoms product for use as a feedstock to a slot-type coke oven coking zone to produce coke suitable for use in a blast furnace,

the improvement comprising: mixing said bottoms product with at least one of said coaly solids at an elevated temperature above the softening temperature of said bottoms product and below the carbonization temperature of said bottoms product, said elevated temperature being between about 200° to about 350° C., and cooling the resulting blend to produce a particulate blend of said bottoms product and said coaly solids for use as a feedstock to a coke oven thereby producing coke of an improved quality upon coking said blend.

4,201,656

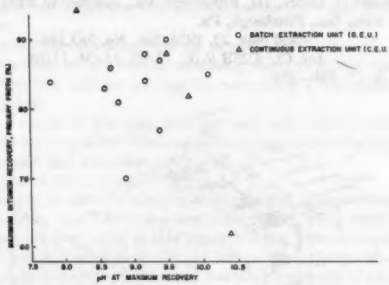
PROCESS AID ADDITION IN HOT WATER PROCESS BASED ON FEED FINES CONTENT

Emerson Sanford, Edmonton, Canada, assignor to Petro-Canada Exploration Inc., Calgary; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; Ontario Energy Corporation; Imperial Oil Limited, both of Toronto; Canada-Cities Service, Ltd., Calgary and Gulf Oil Canada Limited, Toronto, all of, Canada

Filed Feb. 21, 1979, Ser. No. 13,004

Int. Cl.[2] C10G *1/04*

U.S. Cl. 208—11 LE **2 Claims**



1. In the hot water process for recovering bitumen from tar sands feed of varying composition containing varying contents of fines wherein said feed is conditioned with hot water and a process aid, the improvement comprising:

establishing measurements indicative of the varying fines content of the tar sands feed; and

adding the process aid to the conditioning step in quantities responsive to the quantities of fines present in the feed so as to substantially maximize bitumen recovery from the process while substantially minimizing process aid consumption.

4,201,657

COAL SPRAY COMPOSITION

Ardis L. Anderson, Ponca City, Okla., and Marvin E. Huyser, Houston, Tex., assignors to Conoco, Inc., Ponca City, Okla.

Filed Oct. 23, 1978, Ser. No. 953,392

Int. Cl.[2] C08L *95/00*

U.S. Cl. 208—23 **6 Claims**

1. A hydrocarbon composition comprising:

(a) 50 to 75 volume percent decant oil from a fluidized bed catalytic cracking operation, said decant oil having a K factor of not more than 10.5; and

(b) 50 to 25 volume percent asphalt; said composition having an initial boiling point above 500° F., a viscosity of at least 700 centistokes at 100° F., and a flash point of at least 230° F.

4,201,658

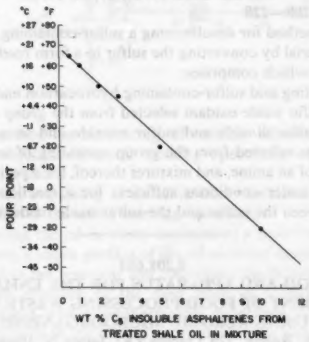
POUR POINT DEPRESSANT MADE FROM THE ASPHALTENE COMPONENT OF THERMALLY TREATED SHALE OIL

Harbo P. Jensen, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 29, 1978, Ser. No. 891,566

Int. Cl.[2] C10G *21/00*

U.S. Cl. 208—39 **2 Claims**



1. A process for making a product useful as a pour point depressant which comprises

(a) thermally treating a raw whole shale oil in substantially liquid phase at a temperature from 600° F. (316° C.) to below the point of significant thermal decomposition for a period of 0.02 to 3 hours, thereby forming a thermally treated shale oil,

(b) forming a mixture of said thermally treated shale oil and a deasphalting solvent under deasphalting conditions, and

(c) separating from said mixture an insoluble asphaltene component, usable as a pour point depressant, and a deasphalted shale oil having a pour point substantially that of said raw shale oil.

4,201,659

PROCESS FOR THE PREPARATION OF GAS OIL

Pieter B. Kwant, Amsterdam; Dirk Kanbier, The Hague; Petrus W. H. L. Tjan, Amsterdam, and Mohammed Akbar, The Hague, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 29, 1979, Ser. No. 43,187

Claims priority, application Netherlands, Jul. 7, 1978, 7807357

Int. Cl.[2] C10G *37/04*

U.S. Cl. 208—73 **13 Claims**

1. A process for the preparation of gas oil from an asphaltenes-containing residual hydrocarbon oil which comprises

(a) thermally cracking said asphaltenes-containing oil in a first thermal cracking zone at a temperature from about 400° to 500° C. and a pressure from about 1 to about 30 bar to obtain a first cracked product comprising 5 to 30% w on said asphaltenes-containing oil of thermally cracked material boiling at a temperature lower than the boiling range of said asphaltenes-containing oil,

(b) separating said first cracked product by flashing in a phase separation zone into

(i) a light fraction boiling substantially below 500° C. which contains in addition to components boiling below 350° C., additional components boiling between 350° and 500° C., and

(ii) a heavy fraction boiling substantially above 350° C. which contains in addition to components boiling above 500° C., additional components boiling between 350° and 500° C.,

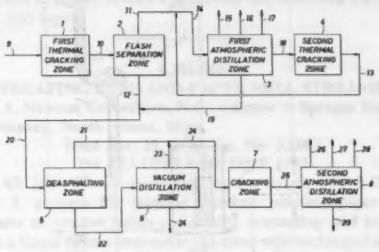
(c) separating the light fraction from step (b) by fractionation distillation in a first atmospheric distillation zone into

(i) at least one light distillate fraction,

(ii) a heavy distillate fraction, and

(iii) a residual fraction,

(d) separating said residual fraction from step (b) by vacuum



distillation in a vacuum distillation zone into a vacuum distillate and a vacuum residue,

(e) thermally cracking the heavy distillate fraction from step (c) in a second thermal cracking zone at a temperature from about 400° to 550° C. and a pressure from about 1 to 30 bar to obtain a second thermally cracked product comprising from about 20 to 75% w of components boiling below the boiling range of said asphaltenes-containing oil free to step (a),

(f) recycling said product from step (e) as feed to step (c) along with the light fraction,

(g) cracking the vacuum distillate from step (d) in a cracking zone which is either a catalytic cracking zone or a hydrocracking zone to obtain a cracked product, and

(h) separating said cracked product by fractionation distillation in a second atmospheric distillation zone to obtain at least one distillate gas oil fraction and an atmospheric residue.

4,201,660

PROCESS FOR THE SEPARATION OF MIXTURES OF VARIOUS HYDROCARBON COMPOUNDS

Kurt Zosel, Oberhausen, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Muhlmann, Fed. Rep. of Germany

Continuation of Ser. No. 808,946, Jun. 22, 1977, abandoned, which is a continuation of Ser. No. 734,562, Oct. 21, 1976, abandoned, which is a continuation of Ser. No. 658,657, Feb. 17, 1976, abandoned, which is a continuation of Ser. No. 492,100, Jul. 26, 1974, abandoned, which is a continuation of Ser. No. 113,025, Feb. 5, 1971, abandoned, which is a continuation of Ser. No. 718,959, Apr. 4, 1968, abandoned, which is a continuation of Ser. No. 476,106, Jul. 30, 1965, abandoned. This application Feb. 3, 1978, Ser. No. 875,034

Claims priority, application Austria, Aug. 5, 1964, 6739/64

The portion of the term of this patent subsequent to Jul. 13, 1993, has been disclaimed.

Int. Cl.[2] B01D *17/00*; C10G *21/14*

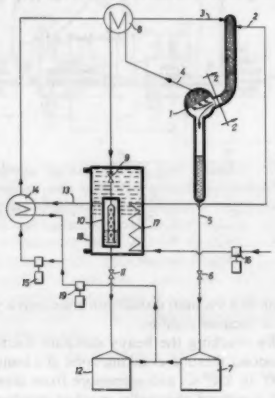
U.S. Cl. 208—86 **42 Claims**

1. A process for the separation of petroleum distillation residues containing lower boiling fraction and higher boiling fraction, which comprises the steps:

(a) contacting said residue in liquid state with a process gas

under super-critical conditions of temperature and pressure of the gas such that the gas will take up at least a portion of said mixture in a quantity varying inversely with said temperature, and effecting said contacting in a manner so that this occurs, said gas having a critical temperature of 90°–250° C. and being inert to the distillation residue, so that a portion of the lower boiling fraction is taken up by the process gas, whereby there is formed a gas phase containing process gas and lower boiling fraction taken up by the process gas, and a liquid hase containing higher boiling fraction of said distillation residue, said contacting being at a temperature up to 100° C. above the critical temperature,

(b) separating the gas phase from the liquid phase, while still maintaining super-critical conditions as aforesaid, thereafter



(c) condensing at least part of the lower boiling fraction from the gas phase by reducing the pressure,

(d) separating condensed lower boiling fraction from the two phase mixture resulting from the condensation,

(e) after separating the lower boiling fraction, cooling the process gas resulting from the separation to liquefy the process gas,

(f) pressurizing the liquefied process gas to the super-critical pressure employed in step (a),

(g) heating the pressurized liquefied process gas to the super-critical temperature employed in step (a) to convert it to process gas at the super-critical temperature and pressure used in step (a), in said heating supplying only energy to raise the temperature,

(h) employing the process gas produced in step (g) in the contacting of step (a).

4,201,661

PROCESS FOR PRODUCING AROMATICS OF HIGH PURITY FROM OIL CUTS

Bernard Juguin; Jean-Francois Le Page, both of Rueil Malmaison, and Jean Miquel, Paris, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Mar. 26, 1974, Ser. No. 454,942

Claims priority, application France, Mar. 26, 1973, 73 10854

Int. Cl.[2] C10G *35/08*

U.S. Cl. 208—139 **1 Claim**

1. A process for producing aromatic hydrocarbons from saturated or unsaturated gasolines, in the presence of hydrogen and a catalyst, in at least one reaction zone, each reaction zone being divided into successive steps (α) and (β) wherein step (α) is conducted at 400°–600° C. under a pressure of 1 to 60 kg/cm^2, with a substantially neutral γ-alumina catalyst having a specific surface less than 100 m^2/g, and step (β) is conducted at 500°–600° C. under a pressure of 1 to 60 kg/cm^2, with an acidic catalyst, of cubic γ-alumina or chlorinated or fluorinated alumina each step being conducted at an hourly feed rate by volume of the liquid charge of about 0.1–10 times the volume of the catalyst, in the presence of a catalyst containing (a) alumina, (b) 0.01–5% by weight of platinum with respect to alumina, (c) 0.001–1% by weight with respect to alumina of at least one metal selected from the group consisting of rhodium and palladium, and (d) 0.0001–0.05% by weight with respect to alumina of at least one metal selected from the group consisting of copper, silver and gold.

4,201,662

PROCESS FOR CONVERTING SULFUR IN HYDROCARBON TO WATER SOLUBLE FORM

Robert L. Horton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 3, 1979, Ser. No. 26,502

Int. Cl.[2] C10G *29/20, 27/00, 19/02*

U.S. Cl. 208—228 **13 Claims**

1. A method for desulfurizing a sulfur-containing hydrocarbon material by converting the sulfur to a form readily soluble in water which comprises:

contacting said sulfur-containing hydrocarbon material with a sulfur oxide oxidant selected from the group consisting of sulfur dioxide and sulfur trioxide and an amine promoter selected from the group consisting of an amine, a salt of an amine, and mixtures thereof, for a period of time and under conditions sufficient for a reaction to occur between the sulfur and the sulfur oxide oxidant.

4,201,663

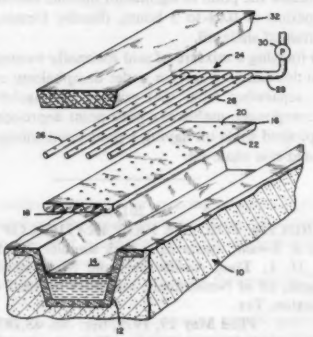
METHOD AND APPARATUS FOR THE ENHANCED TREATMENT OF FOOD PROCESSING WASTE WATERS USING AEROBIC MICROORGANISMS

Dwayne A. Rollag, 320 Lincoln La.; James N. Dornbush, 324 Elm Ave., both of Brookings, S. Dak. 57006, and Robert C. Renner, 124 S. Bryan #4, Fort Collins, Colo. 80521

Filed Sep. 7, 1978, Ser. No. 940,328

Int. Cl.[2] C02C *1/17*

U.S. Cl. 210—16 **14 Claims**



1. A method of reducing odors eminating from an anaerobic lagoon comprising the steps of:

(a) providing a floatation layer pervious to gases produced by the lagoon on the surface of the liquid contained in said anaerobic lagoon of sufficient size so that it substantially covers the lagoon surface;

(b) covering said floatation layer with a gas pervious medium containing microorganisms that eliminate odors from anaerobic lagoon gas; and

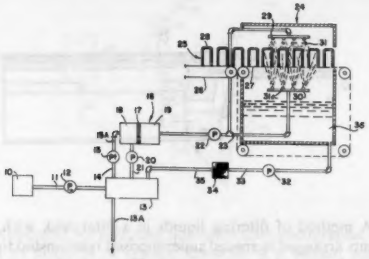
(c) aerating said medium to enhance the growth of said microorganisms.

4,201,664

ULTRAFILTRATION OR REVERSE OSMOSIS TREATMENT OF EMULSIFIED OIL METAL WORKING COOLANTS

Ihab M. Hekal, Downers Grove, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Sep. 29, 1975, Ser. No. 617,348
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—23 H 7 Claims



1. A method for recovering oil residues adhered to metal articles subjected to metal working operations which comprises sequentially

providing a quantity of an oil-in-water emulsion used as a coolant in the metal working operation,

circulating the oil-in-water emulsion to a reservoir,

diverting a minor portion of the oil-in-water emulsion circulated to the reservoir and conveying the diverted portion under pressure to the feed zone of a filtration unit equipped with a semipermeable membrane which is impermeable to the oil and permeable to the water portions of the oil-in-water emulsion,

collecting a concentrated suspension of oil solids in the feed zone and circulating the suspension to the reservoir,

collecting the water permeate passed through the membrane and circulating the permeate to a rinse station,

rinsing the metal article with the permeate at the rinse station,

collecting an effluent from the permeate rinsing of the article the effluent containing oil solids rinsed from the article and circulating the effluent to the reservoir whereby the oil residue from the article is intermixed with the coolant and is available for use in the metal working operation.

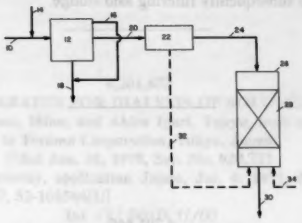
4,201,665

USE OF NONSTOICHIOMETRIC CARBON-SULFUR COMPOUNDS TO REMOVE COMPONENTS FROM LIQUIDS

David W. Savage, Summit; Chin H. Chang, Edison, and John M. Longo, New Providence, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 3, 1978, Ser. No. 866,267
Int. Cl.[2] B01D *15/06*
U.S. Cl. 210—32 45 Claims

1. A process for removing dissolved organic materials, dissolved inorganic materials or mixtures thereof from a liquid which comprises contacting said liquid with a nonstoichiometric carbon-sulfur compound of the formula C_xS, where x ranges from 4 to about 50, said compound having a surface area of at least 300 square meters per gram, for a period of time



sufficient to adsorb at least a portion of said dissolved materials from said liquid.

4,201,666

TREATING PULP-AND-PAPER MILL STREAMS

Joel A. Newton, Greensboro, N.C., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 23, 1979, Ser. No. 32,052
Int. Cl.[2] C02B *1/20*; D21F *1/82*
U.S. Cl. 210—47 3 Claims

1. A process for treating aqueous pulp-and-paper mill streams to remove solids comprising contacting said streams with a liquid stream derived in the nitric acid etching of aluminum consisting essentially of aqueous acidic aluminum nitrate, said liquid stream containing added high-molecular weight, highly cationic polyelectrolyte, thoroughly mixing these streams, allowing suspended solids to settle, and recovering a supernatant liquid of reduced solids content.

4,201,667

PROCESS FOR REMOVING ARSENIC FROM AQUEOUS MEDIUMS

Hsiang P. Liao, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Feb. 9, 1979, Ser. No. 10,434
Int. Cl.[2] C02C *5/04*
U.S. Cl. 210—50 7 Claims

1. A process for treating an aqueous, arsenic-containing medium to effect removal of arsenic therefrom which comprises incorporating in said aqueous medium, in the presence of phosphorus, sufficient $Ca(OH)_2$ to adjust said aqueous medium to a pH of from about 7.0 to 11.5 to thereby precipitate both arsenic and phosphorus from said aqueous medium, and thereafter separating the precipitate from said aqueous medium.

4,201,668

TREATMENT OF SLUDGE COMPRISING BIOLOGICAL AGGREGATE

Isao Miyanohara; Hiroshi Miyazaki, and Hideo Kawamura, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co. Ltd., Yamaguchi, Japan

Continuation of Ser. No. 798,171, May 18, 1977, Pat. No. 4,125,466. This application Jun. 20, 1978, Ser. No. 917,287
Claims priority, application Japan, May 18, 1976, 51-56114; May 18, 1976, 51-56115
The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.
Int. Cl.[2] C02C *3/00*
U.S. Cl. 210—51 1 Claim

1. A method of treating sludge comprising biological aggregate which comprises: adding to said sludge from 2 to 15 weight percent of a magnesium compound selected from the group consisting of magnesium hydroxide magnesium chloride, magnesium sulfate and magnesium carbonate and from 2 to 20 weight percent of an iron salt selected from the group

consisting of ferrous chloride, ferric chloride, ferrous sulfate and ferric sulfate based on the solid component in said sludge; adding a base to maintain the pH of the sludge at greater than 10.5; and subsequently filtering said sludge.

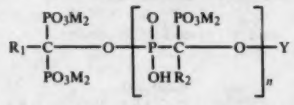
4,201,669

DEPOSIT CONTROL THROUGH THE USE OF OLIGOMERIC PHOSPHONIC ACID DERIVATIVES

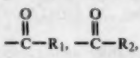
Larry W. Becker, Wilmington, Del.; Philip S. Davis, Furlong, Pa., and Ian D. Morrison, Webster, N.Y., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Sep. 11, 1978, Ser. No. 941,536
Int. Cl.² C02B 5/06
U.S. Cl. 210—58 **20 Claims**

1. A method of controlling the formation and subsequent deposition of scale-forming salts on the structural parts of a system having an aqueous medium, which medium contains scale-imparting cations and anions, which comprises adding to said medium a sufficient threshold amount for the purpose of a water soluble, chlorine-resistant phosphonate of high calcium tolerance having the structural formula

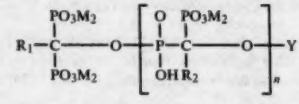


where R_1 and R_2 each represent a group having the formula C_xH_{2x+1}; x is from 1 to and including 4; Y is hydrogen,

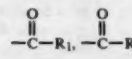


or mixtures thereof; M is a water soluble cation; and n is 1 or greater.

12. A method of controlling the formation and subsequent deposition of calcium phosphate on the structural parts of a system having an aqueous medium, which medium contains calcium and phosphate ions, which comprises adding to said medium a sufficient threshold amount for the purpose of a water soluble, chlorine-resistant phosphonate having the structural formula



where R_1 and R_2 each represent a group having the formula C_xH_{2x+1}; x is from 1 to 13; Y is hydrogen,



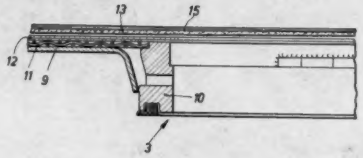
or mixtures thereof; M is a water soluble cation; and n is 1 or greater.

4,201,670

METHOD OF AND DEVICE FOR FILTERING LIQUIDS

Rolf Baur, Lautern, Fed. Rep. of Germany, assignor to Schenk-Filterbau Gesellschaft mit beschränkter Haftung, Waldstetten, Fed. Rep. of Germany

Filed Feb. 6, 1978, Ser. No. 875,297
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1977, 2705046
Int. Cl.² B01D 33/26
U.S. Cl. 210—75 **11 Claims**



1. A method of filtering liquids in a filter tank with filter elements arranged in spaced superimposed relationship to each other and connected to a rotatable filtrate discharging shaft, which includes in combination the steps of: rotating radial, plane filter elements having uninterrupted, porous filtering surfaces and fixed to a hollow shaft with openings below said filtering surfaces to the interior of said shaft, each filter element including an impervious, flat metal plate with passages leading to said openings, introducing the liquid to be filtered together with an auxiliary filter substance so as to cause said auxiliary filter substance to settle in a sedimentation flow with substantially equal thickness on the filtering surfaces of said filter elements and form filtering layers deposited uniformly thereon for the liquid to be filtered, and during the sedimentation flow superimposing upon the liquid to be filtered including the auxiliary filer substance an additional component of movement extending transverse to the sedimentation flow and in radial direction with regard to the filter shaft, caused by rotation of said elements, and conducting the filtered liquid passing through said filter substance on said filtering surfaces through said passages and said openings to the interior of said shaft.

10. A device for filtering liquids with an auxiliary filter substance settled with substantially equal thickness on filtering elements having filtering layers deposited uniformly andd formed thereon for the liquid to be filtered with an additional component of movement superimposed thereon transverse to sedimentation flow, which includes in combination: a tank having bearing means associated therewith and also having a fluid inlet for the liquid to be filtrated, a hollow shaft arranged in said tank and extending in substantially vertical direction while being rotatably journaled in said bearing means, a plurality of radial, plane filter elements, each element being formed with a hub connected to said shaft, an impervious metal plate fixed to said hub and extending radially from said shaft, and a porous filtering web on said plate having a thin fabric web with a plane, uninterrupted filtering surface deposited uniformly thereon, said element being connected to said hollow shaft for rotation therewith and for receiving liquid to be filtrated from said fluid inlet, conduit means between said filtering web and said plate of each filtering element connecting the filtering surface with the interior of said hollow shaft, including openings through said hub and passages between said plate and hub leading to said passages, said filtering surface of said filtering plate extending substantially perpendicular to the axis of said hollow shaft, said filter plates being arranged in spaced superimposed relationship to each other, and variable drive means drivingly connected to said hollow shaft for rotating the latter and controlling the speed of rotation of said hollow shaft. so as to cause a substantially even layer of auxiliary filtering substance to be deposited on said filter elements.

4,201,671

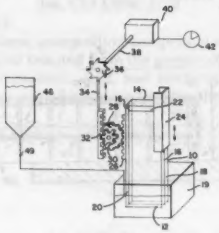
CHROMATOGRAPHY METHOD AND APPARATUS

Yoshisuke Ozaki, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 28, 1978, Ser. No. 929,059

Int. Cl.² B01D *15/08*

U.S. Cl. 210—138 **3 Claims**



1. Apparatus for effecting thin-layer chromatographic separation of mixtures of organic material in a solvent solution which comprises means for alternately and repeatedly introducing and removing a chromatographic plate from a reservoir of the solution in a container, means for maintaining said reservoir within said container at a constant vertical level, and means to control the time the plate is in contact with the reservoir to permit the solvent to move upwardly on the plate past a spot previously deposited on the plate and to control the time the plate is removed from the reservoir to permit substantially all the solvent on the plate to evaporate.

4,201,672

CAKE DISPLACEMENT MEANS FOR FILTER PRESSES

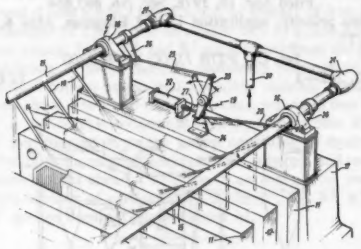
Jack Kenyon, Goostrey, England, assignor to The Moseley Rubber Co. Ltd., Manchester, England

Filed Jul. 10, 1978, Ser. No. 923,120

Claims priority, application United Kingdom, Sep. 14, 1977, 38415/77

Int. Cl.² B01D *25/32, 35/16*

U.S. Cl. 210—225 **9 Claims**



1. A cake displacement means for a filter press including a plurality of generally rectalinearly shaped press plates arranged in successive face-to-face disposition, and movable between a closed condition wherein adjacent press plates are loaded into pressure abutment, and an open condition, wherein adjacent plates are in spaced apart relationship, a press chamber defined by and between successive such press plates, and a filter cloth at each side of the said press chamber, the displacement means comprising at least one axially fixed nozzle mounted generally adjacent an upper edge and entirely outside the periphery of a filter plate in the open condition of the press each nozzle being oriented to direct a respective jet of pressure fluid fed thereto towards the edge of and in a plane generally parallel to a cake formed in a respective chamber and adhering to a filter cloth extending across the face of the plate, means to move said nozzle in said plane so as to direct said jet over the full area of said plate, and a fluid feed means adapted to supply fluid under pressure to each nozzle.

4,201,673

APPARATUS FOR DIALYSIS OF SOLUTION

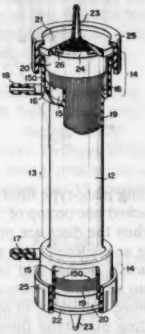
Michio Kanno, Hino, and Akira Igari, Tokyo, both of Japan, assignors to Terumo Corporation, Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 920,717

Claims priority, application Japan, Jul. 4, 1977, 52-79709; Aug. 4, 1977, 52-104564[U]

Int. Cl.² B01D *31/00*

U.S. Cl. 210—321 B **13 Claims**



1. An artificial kidney comprising:

a cylindrical housing with both ends open,

a plurality of spaced apart elongated hollow fibers arranged within the housing substantially parallel to the longitudinal axis of the housing, each of said hollow fibers defining a liquid passage inside the respective hollow fibers and said hollow fibers being arranged to define a liquid passage outside said hollow fibers and between said hollow fibers, said hollow fibers forming a fiber bundle,

a pair of seal members, one at each end portion of the housing, for securing the end portions of the hollow fibers to the housing in a liquid-tight fashion and for separating said liquid passages inside the hollow fibers from said liquid passage outside the hollow fibers,

a dialysate inlet port provided at one end of the housing near one of the seal members and communicating with one end of said liquid passage outside the hollow fibers,

a dialysate outlet port provided at the other end of the housing near the other seal member and communicating with the other end of said liquid passage outside the hollow fibers,

a solution inlet port and a solution outlet port provided at the ends of the housing, respectively and communicating with the liquid passages inside the hollow fibers,

means for sealing said solution inlet and outlet ports to the housing and out of liquid communication with the dialysate inlet and outlet ports, and

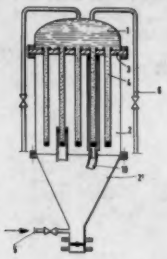
a dialysate deflection or dispersion member disposed at each end of the housing at least within the portion of the housing opposite to and spaced from the respective dialysate inlet and outlet ports for dispersing a flow of dialysate by said dialysate impinging thereagainst,

said solution being blood, said dialysate inlet port having a diameter of 1.5 to 3.5 mm and said dialysate outlet port having a diameter of 6 to 10 mm to prevent "channeling" among the hollow fibers in the housing.

4,201,674
APPARATUS FOR CLEANING PLATE-TYPE FILTER ELEMENTS LOCATED IN A TANK FILTER

Günther Schwinghammer, Dortmund, Fed. Rep. of Germany, assignor to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 963,752
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1977, 2752906
Int. Cl.² B01D *35/16, 41/04*
U.S. Cl. 210—333 R 7 Claims



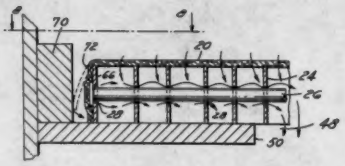
1. Device for cleaning plate-type filter elements made up of a plurality of discs stacked one on top of the other and forming the microfine slots when the discs are pressed together, comprising a tank forming an enclosed open space, a sheet extending generally horizontally across said tank and dividing the open space therein into an upper filtrate chamber and a lower unfiltered liquid chamber, a plurality of laterally spaced generally vertically extending plate-type filter elements extending downwardly from and through said sheet into said lower chamber with the lower ends of said filter elements spaced downwardly from said sheet, wherein the improvement comprises a cleaning tube insertable over one said filter element from the lower end thereof and positionable relative to the one said filter element for laterally enclosing a vertically extending portion thereof from the lower end of said element, said tube spaced radially outwardly from the surface of said element forming a vertically extending annular open space therebetween with the radially outer surface of the annular open space being formed by said cleaning tube and the radially inner surface of the annular open space being formed by said filter element, a connection to the lower end of said cleaning tube for supplying a pressurized cleaning fluid thereto for flow upwardly through said cleaning tube directly into the annular open space radially outwardly of said element so that the pressure of the cleaning fluid acts over the entire surface of said filter element laterally enclosed by said cleaning tube, and means circumferentially disposed at the upper portion of said cleaning tube for providing a fluid-tight seal between said cleaning tube adjacent the upper end thereof and said filter element enclosed by said cleaning tube.

4,201,675
LIQUID FILTER WITH NOVEL SEAL MEANS

Herbert R. Dameran, 25321 Wykeshire, Farmington Hills, Mich. 48018

Filed Dec. 14, 1978, Ser. No. 969,461
Int. Cl.² B01D *33/12*
U.S. Cl. 210—387 2 Claims

1. A liquid filter comprising, in combination:
a conveyor;
means cooperating with the conveyor to allow formation of a pool of a liquid to be filtered above the conveyor;
a sheet of filter medium supported by the conveyor when passing through the pool;
a compartment for collecting the filtrate obtained when the liquid passes through the filter medium;
means for inducing a partial vacuum in the compartment;
means for communicating the partial vacuum throughout the conveyor under the filter medium;
the filter medium when passing through the pool mechanically unrestrained with respect to movement away from the conveyor and responsive to the partial vacuum in the conveyor so as to be pulled against the conveyor in a sealing relation; and

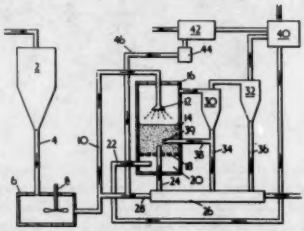


a filter medium guide with lead-in means positioned for directing and folding a portion of the sheet sufficiently proximate with a side of the conveyor having holes communicating with the filtrate compartment so to enable the portion to seal the holes in response to the partial vacuum within the compartment.

4,201,676
METHOD OF HEAT TREATING A MATERIAL

Arthur A. Randell, Tewkesbury, and Norman Hodgkinson, Cheltenham, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Apr. 19, 1978, Ser. No. 897,854
Claims priority, application United Kingdom, May 6, 1977, 19056/77
Int. Cl.² F27B *15/00*; C09K *3/00*
U.S. Cl. 252—1 12 Claims



1. A method for the combustion of colliery tailings having a water content, and combustible and incombustible components, the method including the steps of introducing colliery tailings in slurry form having a solids content between 45% and 65% by weight into a fluidized bed, burning the combustible components at least in part whereby the water content is volatilized substantially instantaneously, and maintaining the fluidized bed at a temperature below that at which the solids components sinter.

4,201,677

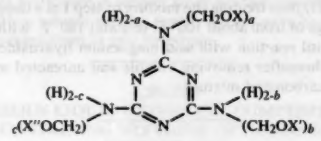
INTUMESCENT COMPOSITION COMPRISING CYCLIC NITROGEN COMPOUND AND PHOSPHORUS COMPOUNDS

Jayendra G. Shukla; Ray E. Smith, and Richard R. Nicholson, all of Ann Arbor, Mich., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Sep. 5, 1978, Ser. No. 939,625
Int. Cl.[2] C09K 3/28
U.S. Cl. 252—8.1 10 Claims

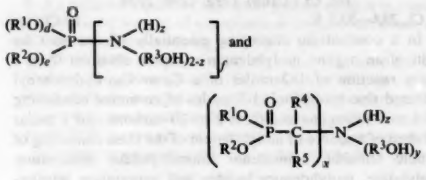
1. An intumescent composition comprising a cyclic nitrogen compound, an acid selected from the group consisting of phosphorous acid, phosphoric acid, and mixtures thereof, water, and an hydroxy-containing organo-phsophorus compound, wherein:

(a) said cyclic nitrogen compound is



wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, and X, X', and X" are independently selected from the group consisting of hydrogen and —CH_3;

(b) said hydroxy-containing organo-phosphorus compound is selected from the group consisting of



I

and

II

and mixtures thereof, wherein d is an integer of from 0 to 2, e is an integer of from 0 to 2, f is an integer of from 1 to 3, and d plus e plus f equal 3; z is an integer of 0 to 1; x is an integer of 1 to 2, y is an integer of 1 to 2, and x plus y plus z equal 3; R^1, R^2, and R^3 are selected from the group consisting of alkyl radicals containing from about 1 to about 6 carbon atoms and haloalkyl radicals containing from about 2 to about 6 carbon atoms, provided that when R^3 is haloalkyl it contains at least 3 carbon atoms; R^4 and R^5 are selected from the group consisting of hydrogen, alkyl radicals, and haloalkyl radicals, wherein said radicals contain from about 1 to about 6 carbon atoms; and the total number of carbon atoms in the R^1, R^2, R^3, R^4, and R^5 groups does not exceed about 14.

4,201,678

FOAM DRILLING AND WORKOVER IN HIGH TEMPERATURE WELLS

David S. Pye, Brea, and Paul W. Fischer, Whittier, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Mar. 17, 1978, Ser. No. 887,596
Int. Cl.[2] C09K 7/02
U.S. Cl. 252—8.5 A 19 Claims

1. In the method for conducting foam drilling and workover operations in a bore hole penetrating a subterranean reservoir having a temperature of about 400° to 700° F., wherein foam is generated by contacting an aqueous solution of a foaming agent with a gas, and said foam is caused to flow upwardly through the bore hole to carry solid and liquid materials out of the bore hole, the improvement which comprises using as the foaming agent a mixture comprising: about 0.15 to 0.6 percent by weight of a first foaming agent comprising a high alkyl amphoteric betaine selected from the group consisting of cocodimethyl carboxymethyl betaine, lauryl dimethyl carboxymethyl betaine, lauryl dimethyl alpha-carboxyethyl betaine, cetyl dimethyl carboxymethyl betaine, lauryl bis-(2 hydroxyethyl) carboxymethyl betaine, oleyl dimethyl gamma-carboxypropyl betaine, lauryl bis-(2 hydroxypropyl) alpha-carboxyethyl betaine, and the ammonium salts of the foregoing; and about 0.06 to 0.25 percent by weight of a second foaming agent comprising a sodium olefin sulfonate having from 10–18 carbon atoms.

4,201,679

DRILLING FLUID ADDITIVE

Larry D. Barker, and James K. Bannerman, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 825,314, Aug. 17, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,622
Int. Cl.[2] C09K 7/02
U.S. Cl. 252—8.5 A 3 Claims

1. A drilling fluid viscosifier consisting essentially of sepiolite and a 20% to 80% hydrolyzed polyacrylamide polymer extender therefor, having the general formula $(CH_2CHCONH_2)_x$, where x ranges between about 5600 and 14,900, said extender being present in an amount between about 0.01 and 0.25 pounds per 15 pounds of sepiolite.

4,201,680

SMOOTHING AGENTS FOR TREATING TEXTILE FIBER MATERIAL

Peter Waltenberger, Hilden; Günter Uphues, and Manfred Petzold, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 917,986
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1977, 2733493
The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.
Int. Cl.[2] D06M 13/34
U.S. Cl. 252—8.6 15 Claims

1. A smoothing agent for the treatment of textile fiber material consisting essentially of:

(Ia) from 0 to 50% by weight of a fatty acid ester from 1 mole of a fatty acid having from 8 to 18 carbon atoms and 1 mole of an alkanol having from 9 to 22 carbon atoms,

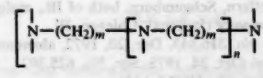
(Ib) from 0 to 50% by weight of a fatty acid ester substantially free from unreacted fatty acid, said ester being prepared from up to 6 moles of a fatty acid having from 8 to 18 carbon atoms and 1 mole of an alkanepolyol having from 2 to 10 carbon atoms and 2 to 6 hydroxyl groups, wherein said moles of fatty acid is in excess of said mole of alkanepolyol,

(IIa) from 10 to 50% by weight of paraffin having a melting range of from 40° C. to 60° C.,

(IIb) from 0 to 25% by weight of a liquid paraffin,

wherein the total of components (Ia), (Ib), (IIa) and (IIb) is from 10% to 50% by weight,

(III) from 1% to 10% by weight of at least one fatty acid amidopolyamine having the formula

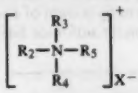


wherein —OCR_1 is the acyl of a fatty acid having from 14 to 22 carbon atoms, m is an integer from 2 to 6, and n and o are numbers from 1 to 3,

(IV) from 0 to 5% by weight of a fatty acid monoalkanola-

mide, -dialkanolamide, or -polydialkanolamide from 1 mole of a fatty acid having from 12 to 18 carbon atoms and an alkanolamine selected from the group consisting of 1 mole of a monoalkanolamine having from 2 to 3 carbon atoms and 1 to 2 moles of a dialkanolamine having from 4 to 6 carbon atoms,

(V) from 0 to 5% by weight of at least one quaternary ammonium salt having the formula



wherein R_2 is an aliphatic hydrocarbon having from 12 to 18 carbon atoms, R_3 is a member selected from the group consisting of aliphatic hydrocarbon having from 1 to 18 carbon atoms, phenylalkyl having from 7 to 18 carbon atoms and alkylphenylalkyl having from 8 to 18 carbon atoms, R_4 and R_5 are alkyl having 1 to 2 carbon atoms, and X^- is a salt-forming anion,

(VI) from 0 to 5% by weight of an ethylene oxide adduct to a compound having a replaceable hydrogen selected from the group consisting of aliphatic hydrocarbon alcohols having 9 to 22 carbon atoms, alkylphenols having from 12 to 20 carbon atoms, fatty acids having from 12 to 22 carbon atoms, higher fatty acid amides with alkylene diamines and dialkylene triamines having a total of from 12 to 22 carbon atoms, and alkylamines having from 12 to 22 carbon atoms, having from 35% to 85% by weight of ethylene oxide,

wherein the total of components (III), (IV), (V) and (VI) is from 1% to 12% by weight,

(VII) from 0 to 1% by weight of a protective colloid,

(VIII) from 0 to 10% by weight of a water-immiscible organic solvent,

(IX) from 1% to 10% by weight of an acid selected from the group consisting of alkanoic acids having from 1 to 4 carbon atoms and hydroxyalkanoic acids having from 2 to 4 carbon atoms, and

(X) the remainder to 100% by weight, water.

4,201,681

METALWORKING CORROSION INHIBITION/DRAWING LUBRICANT

Henry F. Lipinski, Glenshaw, Pa., and Steven J. Wantling, Miami, Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 838,854, Oct. 3, 1977, abandoned. This application Mar. 26, 1979, Ser. No. 23,629

Int. Cl.[2] C01M *1/40*; C10M *3/34, 5/22*; B21B *45/02*

U.S. Cl. 252—33.2 **16 Claims**

1. A metalworking corrosion inhibitor/drawing lubricant composition comprising a major amount of mineral oil and an effective amount of an additive combination of barium lanolate soap and barium sulfonate wherein said barium lanolate soap is formed in situ by reacting barium hydroxide with wool grease fatty acids.

4,201,682

METHOD OF PREPARING OVERBASED MAGNESIUM SULFONATES

Albert R. Sabol, Munster, Ind.; Dennis G. Petrille, Naperville, and Edward W. Heffern, Schaumburg, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 316,843, Dec. 20, 1972, abandoned. This application Oct. 24, 1975, Ser. No. 625,302

Int. Cl.[2] C10M *1/40*

U.S. Cl. 252—33.4 **8 Claims**

1. The method of preparing over-based oil-soluble magnesium sulfonate compositions consisting of the steps of: (I) heating a reactant mixture consisting of (a) an amount of an oil-soluble sulfonate anion-affording material sufficient to provide about 10–14 weight percent oil-soluble magnesium sulfonate in said composition, said material containing molar proportions of about 0.1–1.0 mol oil-soluble ammonium sulfonate, 0 to about 0.9 mol neutral oil-soluble magnesium sulfonate, and 0 to about 0.9 mol oil-soluble sulfonic acid, said reactant (a) further characterized as containing at least 0.1 mol of said ammonium sulfonate per mol of magnesium oxide in said mixture, (b) magnesium oxide in excess of the stoichiometric amount required for neutral magnesium sulfonate formation, (c) about 0.2 to about 1.0 mol of methanol per mol of magnesium oxide, (d) about 0.5 to about 2.25 mols water per mol of magnesium oxide, and (e) an inert hydrocarbon diluent, at a temperature in the range of about 175° F. to 200° F. under refluxing conditions at atmospheric pressure for a period of time sufficient to convert said magnesium oxide to magnesium hydroxide in said mixture; (II) then treating the mixture of step I at a temperature in the range of from about 100° F. to about 160° F. with carbon dioxide until reaction with said magnesium hydroxide ceases; and (III) thereafter removing volatile and unreacted materials from the carbonated mixture.

4,201,683

ALKANOL SOLUTIONS OF ORGANO MOLYBDENUM COMPLEXES AS FRICTION REDUCING ANTIWEAR ADDITIVES

Philip W. Brewster, Camlachie, Canada, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 21, 1978, Ser. No. 898,839

Int. Cl.[2] C10M *1/38, 1/48, 1/54*

U.S. Cl. 252—32.7 E **12 Claims**

1. In a concentrate consisting essentially of one part by weight of an organo molybdenum complex obtained from a solution reaction of 1–2 moles of a C_1 to C_{50} hydrocarbyl substituted thio-bis-phenol, 1–2 moles of an amine containing from 1 to 5 nitrogens and from 2 to 20 carbons and 1 molar equivalent of a source of molybdenum of the class consisting of molybdic trioxide, ammonium thiomolybdate, ammonium bismolybdate, molybdenum halides and ammonium tetrahydrate, the improvement of using from 0.25 to 5 parts by weight of an alkanol which contains from 5 to 50 carbons for the reaction solvent which is carried out at a temperature of from 135° C. to 225° C. whereby a more readily filterable reaction product is obtained.

4,201,684

LUBRICANT COMPOSITION OF IMPROVED FRICTION REDUCING PROPERTIES

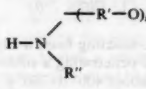
Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 13, 1978, Ser. No. 959,934

Int. Cl.[2] C10M *1/38*

U.S. Cl. 252—47.5 **5 Claims**

1. A lubricating oil composition comprising a major amount of lubricating oil and a minor friction-reducing amount of an additive selected from sulfurized fatty acid esters, sulfurized fatty acid amides and sulfurized fatty acid ester-amides of an alkanol amine, said amine having the formula



wherein R′ is a divalent aliphatic hydrocarbon radical containing 2–4 carbon atoms, n is an integer from 1 to 10, and R″ is selected from hydrogen and the group $—R'O)_n—H$.

4,201,685

LIQUID DEVELOPERS FOR ELECTROSTATIC IMAGES COMPRISING AN ALIPHATIC HYDROCARBON, BINDER, POLYMERIC CARBAMATE AND A CRESOL

Luigi Amariti, Niles, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 11, 1978, Ser. No. 968,013
Int. Cl.[2] G03G 9/12
U.S. Cl. 430—114 14 Claims

1. A liquid developer for developing electrostatic images comprising a dispersion in aliphatic hydrocarbon solvent of particles of imaging material, binder and polymeric carbamate having a linear carbon backbone and carbamate side chains in which the carbamate groups contain at least one alkyl group having at least 5 carbon atoms carried by the nitrogen atom thereof, said binder and said polymeric carbamate being soluble in said hydrocarbon solvent when hot and insoluble in said hydrocarbon solvent at room temperature so as to be present in coprecipitated form in said developer.

4,201,686

AQUEOUS LIQUID DETERGENT COMPOSITIONS CONTAINING MIXTURES OF NONIONIC SURFACTANTS

Govert J. P. Augustijn, Zeist, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,817
Claims priority, application United Kingdom, Jan. 9, 1978, 656/78
Int. Cl.[2] C11D 1/835, 1/72
U.S. Cl. 252—174.22 2 Claims

1. An aqueous liquid unbuilt detergent composition containing 25–45% by weight of a nonionic detergent surfactant mixture, said mixture consisting essentially of:

(a) 50–80% by weight of a primary C_{16}–C_{19} saturated fatty alcohol, condensed with 15–19 moles of ethylene oxide;

(b) 5–25% by weight of a primary C_8–C_{12} saturated fatty alcohol, condensed with 6–10 moles of ethylene oxide;

(c) 5–25% by weight of a primary C_{10}–C_{14} saturated fatty alcohol, condensed with 1–4 moles of ethylene oxide.

4,201,687

CHLOROIMIDE FABRIC BLEACHES

Marvin M. Crutchfield, Creve Coeur; Robert P. Langguth, Overland, and James M. Mayer, Maryland Heights, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 838,279, Sep. 30, 1977, Pat. No. 4,148,742. This application Oct. 25, 1978, Ser. No. 954,494
The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.
Int. Cl.[2] C11D 7/54; 424 149
U.S. Cl. 252—102 11 Claims

1. A fabric bleaching composition comprising: water; a stain bleaching amount of a bleach selected from the group consisting of disodium chloroimidodisulfonate, dipotassium chloroimidodisulfonate, and mixtures thereof; and a sufficient amount of a buffering agent to maintain the pH between about pH 9 and pH 11.

4,201,688

SCALE INHIBITORS

Bronislav H. May, Overijse, Belgium, assignor to Monsanto Europe S.A., Brussels, Belgium

Filed Dec. 16, 1977, Ser. No. 861,395
Claims priority, application United Kingdom, Jan. 10, 1977, 739/77
Int. Cl.[2] C02B 5/06
U.S. Cl. 252—180 6 Claims

1. A composition useful in scale inhibition consisting essentially of (a) diethylenetriaminopenta(methylenephosphonic acid) or an alkali metal salt thereof and (b) aminotri(methylenephosphonic acid) or an alkali metal salt thereof wherein the amount of (b) is from 15 to 30 percent of the total weight of (a) and (b).

4,201,689

PROCESS FOR THE PRODUCTION OF TENSIDE-CONTAINING CATION EXCHANGER ALUMINOSILICATES

Heinz G. Smolka, Langenfeld, and Klaus Schumann, Erkrath, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,587
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727475
Int. Cl.[2] C01B 33/26, 33/28
U.S. Cl. 252—184 17 Claims

1. A process for the production of a cation-exchanging water-insoluble, x-ray amorphous alkali metal aluminosilicate free of excess alkali, containing at least 3 mols of bound water for every mol of Al_2O_3 and from 0.01% to 50% by weight, based on the anhydrous weight, of a surface-active compound active in the presence of water hardness formers selected from the group consisting of anionic surface-active compounds, cationic surface-active compounds, nonionic surface-active compounds, and zwitterionic surface-active compounds, and having for every mol of Al_2O_3, a mols of Me_2O, where Me is an alkali metal, and b mols of SiO_2, wherein a represents a value of from 0.7 to 1.5 and b represents a value of from 0.8 to 6, said aluminosilicates having a calcium sequestering power of from 50 to 200 mg CaO/gm of anhydrous active substance when measured at 50° C. by the Calcium Binding Power Test Method set out in the specification and a particle size of less than 30μ, which comprises the steps of mixing an aqueous alkali metal silicate solution and an aqueous alkali metal aluminate solution in the presence of the desired amount of said surface-active compound active in the presence of water hardness formers, wherein the amount of said alkali metal aluminate solution provided for the precipitation reaction with said alkali metal silicate solution is partially replaced to such an extent by the solution of an acid aluminum salt selected from the group consisting of aluminum sulfate, aluminum nitrate and aluminum chloride, added as a separate solution, that the total amount of alkali metal present in the precipitation reaction mixture over and above the amount of a mols of Me_2O is converted into a water-soluble neutral salt by the acidity of said aluminum salt, by using x mols of Al^{3+} ions in aqueous solution in order to obtain the precipitation product containing a mols of Me_2O and b mols of SiO_2, per 1 mol of Al_2O_3, when using an alkali metal silicate solution containing c mols of Me_2O per b mols of SiO_2 and an alkali metal aluminate solution containing d mols of Me_2O per 1 mol of Al_2O_3, and reducing the given quantity of alkali metal aluminate by (x/2) mols, the value for x being other than 0 and obtained from the equation

$$= \frac{2\,(c + d - a)}{3 + d},$$

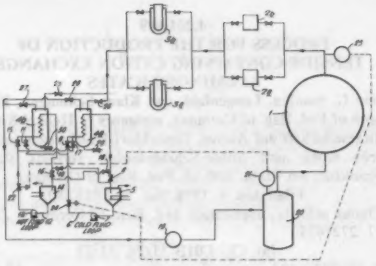
wherein said surface-active compound is present before the formation of the amorphous precipitation product, converting the reaction gel to an amorphous precipitation product by stirring, separating the mother liquor and recovering said cation-exchanging, water-insoluble, x-ray amorphous, alkali metal silicate free of excess alkali.

4,201,690

PROCESSING OF IRRADIATED NUCLEAR FUEL

Alfred L. Mills, Thurso, Scotland, and John A. Williams, Warrington, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 3, 1978, Ser. No. 892,967
Int. Cl.[2] G21C *19/46;* G21F *9/28*
U.S. Cl. 252—301.1 W 3 Claims



1. A process for the dissolution of irradiated nuclear fuel in nitric acid comprising the steps of

(a) contacting the irradiated nuclear fuel material with nitric acid in a dissolver vessel,

(b) providing an atmosphere of carbon dioxide over the dissolver vessel,

(c) directing a portion of the atmosphere to the first of a pair of heat exchangers,

(d) passing a refrigerant through the first of the heat exchangers to cause condensation of said portion of the atmosphere in the first of the heat exchangers,

(e) simultaneously with step (d) passing a liquid at a temperature above the evaporation temperature of carbon dioxide through the second of the pair of heat exchangers to cause evaporation of a portion of the atmosphere which has been condensed in the second of the pair of heat exchangers,

(f) after steps (c) (d) and (e) directing a further portion of the atmosphere to the second of the pair of heat exchangers,

(g) passing a liquid at a temperature above the evaporation temperature of carbon dioxide through the first of the pair of heat exchangers to cause evaporation of the portion of the atmosphere which had condensed therein,

(h) simultaneously with step (g) passing a refrigerant through the second of the pair of heat exchangers to cause condensation of said further portion of the atmosphere therein,

(i) repeating steps (c) to (h) to provide a driving force for circulating the atmosphere round the plant by the alternate condensation and evaporation of portions of the atmosphere.

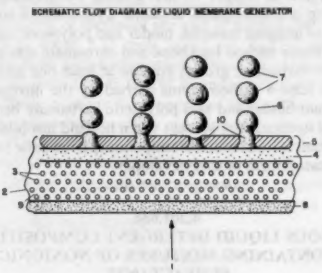
4,201,691

LIQUID MEMBRANE GENERATOR

William J. Asher, Fanwood, and Hsue C. Tsien, Chatham, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 16, 1978, Ser. No. 869,837
Int. Cl.[2] A61K *35/14;* B01F *3/00;* B01J *13/02*
U.S. Cl. 252—314 26 Claims

8. A process for the generation and distribution of a multiple phase dispersion as globules in a suspension phase, said process comprising passing a first fluid through a porous fluid dispersing layer, having a pore size ranging between about 100μ and 0.1μ, into a second fluid, said second fluid being substantially immiscible with said first fluid so that a multiple phase dispersion is formed comprising microdroplets of the first fluid dispersed in the second fluid; passing said multiple phase dispersion through an outlet zone comprising a perforated, substantially nonporous layer having an outer and inner surface, each of said perforations forming an orifice at the outer and inner surfaces of said nonporous layer, which orifices have a diameter ranging between about 3000 and 10 microns, said inner surface being in substantial contact with a porous flow distribution layer, the pores of which flow distribution layer are smaller than the diameter of the orifices at the surface of the nonporous layer, the outer surface of the nonporous layer



forming an interface with the suspension phase, said suspension phase being substantially immiscible with said second fluid, wherein the pressure differential of said flow distribution is greater than or equal to 0.25 times the static pressure differential of an orifice of average size and shape formed at the outer surface of the nonporous layer, whereby said multiple phase dispersion passes through said porous flow distribution layer then through said perforated nonporous layer and into said suspension phase as globules.

4,201,692

GAS MIXTURES FOR GAS-FILLED PARTICLE DETECTORS

Loucas G. Christophorou, Oak Ridge; Dennis L. McCorkle; David V. Maxey, both of Knoxville, and James G. Carter, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 22, 1979, Ser. No. 5,263
Int. Cl.[2] C09K *3/00;* H01J *39/28, 39/30*
U.S. Cl. 252—372 5 Claims

1. An improved tertiary gas mixture for use in gas-filled particle detectors comprising CF_4, C_2H_2 and argon with the concentration of said CF_4 in said mixture being a selected amount in the range from 3–10% and with the concentration of said C_2H_2 in said mixture being a selected amount in the range from 10–15%.

4,201,693

STABLE SCHIFF REAGENT

Wesley D. Hurt, Philadelphia, Pa., and John P. Koski, Woodbury, N.J., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed May 2, 1978, Ser. No. 902,029
Int. Cl.[2] C09K *3/00;* G01N *31/22, 33/16*
U.S. Cl. 252—408 5 Claims

1. A sensitive reagent for detection of aldehydes in biological specimens, which reagent is stable at room temperature for a substantial period of time, comprising potassium metabisulfite, pararosanilin acetate and hydrochloric acid, and having a pH of from about 1.2 to about 2.7.

4,201,694

METHOD FOR INCREASING SHELF-LIFE OF A SERUM BILIRUBIN REFERENCE COMPOSITION AND COMPOSITION PRODUCED THEREBY

Allan L. Louderback, Temple City, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 17, 1978, Ser. No. 925,484
Int. Cl.[2] G01N *33/16*
U.S. Cl. 252—408 **19 Claims**

1. An improved blood serum reference composition of the type comprising blood serum having a bilirubin constituent of known value, characterized in that said composition possesses a pH of from about 8.3 to about 9.5 and further comprising a sulfhydryl compound in an amount sufficient to further enhance the stability of bilirubin.

4,201,695

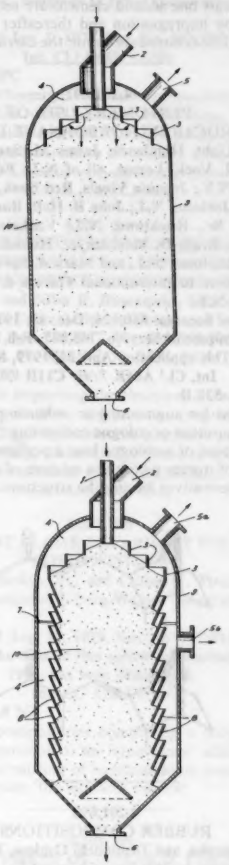
ARRANGEMENT FOR REGENERATING PARTICULATE ADSORBENTS

Harald Jüntgen; Karl Knoblauch, both of Essen; Horst Grochowski, Oberhausen, and Jürgen Schwarte, Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 720,081, Sep. 2, 1976, abandoned. This application Nov. 25, 1977, Ser. No. 854,528
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1975, 2539266
Int. Cl.[2] B01J *21/20, 37/00*; B01D *15/06*
U.S. Cl. 252—411 R **2 Claims**

1. A method for regenerating particulate adsorbents, comprising confining a bed of a mixture of an adsorbent to be regenerated with a particulate regenerating material; withdrawing the mixture from the bed at a lower withdrawal region thereof, thereby inducing a downward flow of the mixture through the confined bed toward the withdrawal region; replenishing said bed with additional adsorbent to be regenerated and with fresh regenerating material from above, so that an upper region of the bed assumes a conical shape; and retarding the flow of the adsorbent and the regenerating material radially along the conical upper region of the bed, using at least two substantially concentric axially staggered tubular baffles radially outward of the location at which replenishing adsorbent is furnished and penetrating to different depths into the conical upper region of the bed, whereby an intimate mixture of the particles of the adsorbent and of the regenerating material is obtained during their flow underneath the baffles.

2. A method for regenerating particulate adsorbents, comprising confining a bed of a mixture of an adsorbent to be regenerated with a particulate heat-exchange regenerating material; withdrawing the mixture from the bed at a lower withdrawal region thereof, thereby inducing a downward flow of the mixture through the confined bed toward the withdrawl region; replenishing said bed with additional adsorbent to be regenerated and with fresh heat-exchange regenerating material from above so that an upper region of the bed assumes a conical shape; and retarding the flow of the adsorbent and the heat-exchange regenerating material radially along the conical upper region of the bed, using at least two substantially concentric axially staggered tubular baffles radially outward of the location at which replenishing adsorbent is furnished and penetrating to different depths into the conical upper region of the bed, whereby an intimate mixture of the particles of the adsorbent and of the heat-exchange regenerating material is obtained during their flow underneath the baffles.



4,201,696

HYDROCARBON ISOMERIZATION CATALYSTS AND PROCEDURES FOR THE PREPARATION THEREOF

Michel Legendre, and Philippe Engelhard, both of Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Continuation of Ser. No. 713,238, Aug. 10, 1976, abandoned. This application Nov. 27, 1978, Ser. No. 963,686
Claims priority, application France, Aug. 13, 1975, 75 25224
Int. Cl.[2] B01J *27/10*
U.S. Cl. 252—442 **33 Claims**

1. A catalyst for the isomerization of hydrocarbons consisting essentially of a carrier which is comprised of at least one refractory metal oxide, including a halogen element present in combined form, and deposited on said carrier:

at least one metal from the platinum group metals;

at least one second element from the group consisting of titanium, zirconium, tungsten and molybdenum;

at least one metal halide selected from the group consisting

of aluminum trichloride, aluminum tribromide, ferric chloride, ferric bromide, beryllium dichloride, zirconium chloride and mixtures thereof; and

wherein said at least one of said platinum group metal and said at least one second element are introduced onto the carrier by impregnation and thereafter said at least one metal halide is introduced onto the carrier by sublimation.

4,201,697

PERFUMERY USES OF OXYHYDROCARBYLNORBORNANE DERIVATIVES

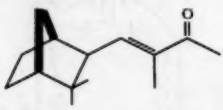
Kenneth K. Light, Highlands; James M. Sanders, Eatontown; Manfred H. Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson, N.J.; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja D. Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 860,124, Dec. 13, 1977, which is a continuation-in-part of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Apr. 24, 1979, Ser. No. 32,772

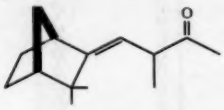
Int. Cl.[2] A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 R **3 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume base or a cologne base a perfuming quantity of a composition of matter which is a mixture of oxyhydrocarbylnorbornane derivatives having the structures:



and



4,201,698

RUBBER COMPOSITIONS

Kunio Itoh, Annaka, and Toshimichi Oshima, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

Filed Aug. 28, 1978, Ser. No. 937,273

Claims priority, application Japan, Aug. 30, 1977, 52/103830; Jun. 2, 1978, 53/66344

Int. Cl.[2] C08L *7/00, 9/00, 19/00, 83/06*

U.S. Cl. 260—3 **6 Claims**

1. A rubber composition curable by heating into a rubbery elastomer comprising:

(a) 100 parts by weight of a rubber blend composed of

(a-1) from 50 to 95% by weight of an organic rubber which is one of natural rubber and an organic synthetic rubber, chosen from the group consisting of styrene-butadiene rubbers, butadiene rubbers, ethylene-propylene rubbers, ethylene-propylenediene terpolymer rubbers, butadiene-acrylonitrile rubbers, ethylene-vinyl acetate copolymer rubbers, and isobutylene-isoprene rubbers, and

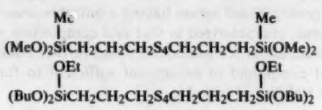
(a-2) from 50 to 5% by weight of an organopolysiloxane expressed by the average unit formula

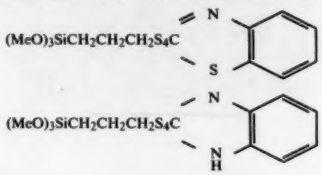
$$R_aSiO_{(4-a/2)}$$

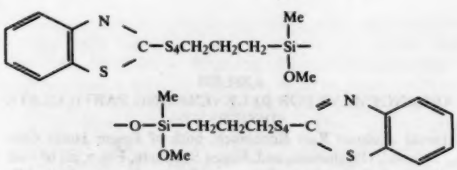
where R is a substituted or unsubstituted monovalent hydrocarbon group and a is a number from 1.98 to 2.05 both inclusive, and having at least two functional units selected from the class consisting of mercapto groups and aliphatically unsaturated linkages in the molecule,

(b) from 0.1 to 20 parts by weight of an organosilicon compound chosen from the group consisting of bis (trimethoxysilylpropyl) tetrasulfide, bis (methyldiethoxysilypropyl) tetrasulfide,

$$(EtO)_3SiCH_2CH_2CH_2S_4CH_2CH_2CH_2Si(OEt)_3$$







wherein Me, Et and Bu denote methyl, ethyl, and butyl groups, respectively,

(c) from 50 to 200 parts by weight of a reinforcing siliceous filler having a specific surface area of at least 50 m^2g, and

(d) from 0.1 to 10 parts by weight of a curing agent chosen from the group consisting of sulfur, sulfur-containing organic compounds, organic peroxides, a combination of an organic peroxide and sulfur, and a combination of an organic peroxide and a sulfur-containing organic compound.

4,201,699

PHENOL-ALDEHYDE RESIN COMPOSITION CONTAINING PECAN PITH EXTRACT AND AN ALDEHYDE

Chia-Ming Chen, 205 Dove Valley Dr., Athens, Ga. 30606

Filed Jul. 12, 1977, Ser. No. 814,920

Int. Cl.[2] C08G *83/00;* **C08L** *61/06, 61/10, 61/14*

U.S. Cl. 260—7 **20 Claims**

1. A phenol-aldehyde resin consisting essentially of the reaction product of up to 4.0 parts by weight of a conventional thermosetting phenol-aldehyde resin precondensate having a viscosity of from 20 to 800 cps at 25° C., and 1.0 part by weight of an alkali organic extract of pecan piths, said extract containing phenolic compounds and at least 2% by weight of crude protein, based on weight of said extract, wherein the mixture is polymerized in an aqueous alkaline system at a temperature of from 30° C. to reflux, until a viscosity of from 20 to 3,000 cps at 25° C. is reached.

4,201,700

PHENOL-ALDEHYDE RESIN COMPOSITION CONTAINING PEANUT HULL EXTRACT AND AN ALDEHYDE

Chia-Ming Chen, 205 Dove Valley Dr., Athens, Ga. 30606

Continuation-in-part of Ser. No. 814,920, Jul. 12, 1977. This application Jul. 5, 1978, Ser. No. 922,101

Int. Cl.[2] C08G *83/00*; C08L *61/06, 61/10, 61/14*

U.S. Cl. 260—7 35 Claims

1. A phenol-aldehyde resin consisting essentially of the reaction product of up to 4.0 parts by weight of a conventional thermosetting phenol-aldehyde resin precondensate having a viscosity of from 20 to 800 cps at 25° C., and 1.0 part by weight of an alkali organic extract of peanut hulls, said extract containing phenolic compounds and at least 2% by weight of crude protein, based on weight of said extract, wherein the mixture is polymerized in an aqueous alkaline system at a temperature of from 30° C. to reflux, until a viscosity of from 20 to 3,000 cps at 25° C. is reached.

4,201,701

DIELECTRIC COATING COMPOSITIONS FROM POLYESTERS AND ROSIN ESTERS

Charles H. Coney, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 850,161, Nov. 10, 1977, Pat. No. 4,153,782. This application Feb. 15, 1979, Ser. No. 12,414

Int. Cl.[2] C08L *93/04*

U.S. Cl. 260—22 CQ 2 Claims

1. Composition comprising

(a) a polyester derived from, based on 100 mol percent dicarboxylic acid and 100 mol percent glycol, at least 70 mol percent terephthalic acid or an ester forming derivative thereof, and at least 70 mol percent 1,2-propanediol, said polyester having an inherent viscosity of between about 0.2 and about 0.5, and

(b) a rosin ester derived from rosin acid and a polyhydric alcohol having from 1 to about 8 carbon atoms, said rosin ester being present in an amount of from about 0.1% to about 70%, based on the combined weight of polyester and rosin ester.

4,201,702

PROCESS TO PRODUCE ALLYL HALIDES COPOLYMERS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 849,853, Nov. 9, 1977, which is a continuation-in-part of Ser. No. 757,239, Jan. 6, 1977, Pat. No. 4,069,391, which is a continuation-in-part of Ser. No. 622,525, Oct. 15, 1975, Pat. No. 4,020,259. This application Jan. 19, 1978, Ser. No. 870,747

Int. Cl.[2] C08L *91/00*; C08G *63/76*; C08C *19/00*; C08F *12/18*

U.S. Cl. 260—28.5 AS 29 Claims

1. The process for the production of copolymer of allyl monohalide and organic polymerizable unsaturated compounds by the following steps:

(a) mixing a material consisting of a fine granular oxidated silicon compound wherein the oxidated silicon compound is selected from the group consisting of hydrated silica, silica, silicoformic acid, polysilicoformic acid, naturally occurring silicates with free silicic acid groups and mixtures thereof, with 1 to 3 parts by weight of an allyl monohalide;

(b) adding 0.10 to 5 parts by weight of an organic polymerizable unsaturated compound to each part by weight of the allylmono-halide compound;

(c) agitating the mixture at a temperature between the temperature at which the polymerizable organic compound is in the liquid state and the lowest boiling temperature of the reactants, and at ambient to 60 psig, for 1 to 12 hours, thereby

(d) producing a copolymer.

4,201,703

POLYPIVALOLACTONE-POLYCARBONATE BLENDS

Paul A. Zorzi; Jesse D. Jones, and Michael E. Kucsma, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 8, 1978, Ser. No. 913,877

Int. Cl.[2] C08L *67/00*

U.S. Cl. 260—37 PC 7 Claims

1. A moldable thermoplastic resin composition having low warpage properties when molded comprising an intimate blend of from about 60 to about 90 weight percent of a polypivalolactone resin and from about 40 to about 10 weight percent of a thermoplastic aromatic polycarbonate resin.

4,201,704

FLAME-RETARDED THERMOPLASTIC POLYESTER COMPOSITIONS HAVING IMPROVED ARC RESISTANCE AND PROCESS FOR PREPARING SAME

Stuart C. Cohen, and Niles R. Rosenquist, both of Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 29, 1977, Ser. No. 865,391

Int. Cl.[2] C08K *3/36, 9/04, 9/06*

U.S. Cl. 260—40 R 16 Claims

1. A process for improving the electrical arc resistance of a thermoplastic composition, said process comprising admixing novaculite with a high molecular weight linear polyester resin and a flame-retarding amount of a flame-retardant, thereby increasing the arc resistance of the composition.

4,201,705

INTUMESCENT FLAME RETARDANT POLYOLEFIN COMPOSITIONS

Yuval Halpern, Skokie, Ill., and Clifton T. Fleenor, Parkersburg, W. Va., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 28, 1978, Ser. No. 937,343

The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.

Int. Cl.[2] C08J *9/00*

U.S. Cl. 260—45.8 NT 7 Claims

1. Polyolefin compositions comprising a polyolefin and a flame retarding amount of an intumescent additive selected from the group consisting of melammonium pentate, the pentate salt of ammelide, the mixtures thereof.

4,201,706

TREATMENT OF CORNEAL EDEMA

Seymour F. Trager, Plainview, N.Y., and Keith Green, Augusta, Ga., assignors to Burton, Parsons & Company, Inc., Washington, D.C.

Filed Sep. 22, 1978, Ser. No. 944,735

Int. Cl.[2] A61K *31/74, 31/79, 31/045*

U.S. Cl. 424—78 9 Claims

1. A method for reducing corneal edema comprising topically applying to the cornea an aqueous ophthalmic solution comprising a therapeutically effective amount of a compound selected from the group consisting of sorbitol, inositol, xylitol, and mixtures thereof.

4,201,707

METHINE DYESTUFFS CONTAINING A PHENYL AZO GROUP

Hubertus Psaar, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

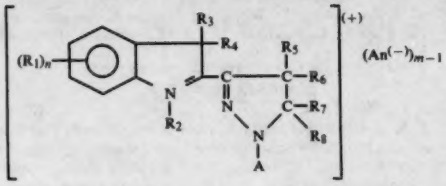
Division of Ser. No. 683,622, May 5, 1976, Pat. No. 4,138,570. This application Jun. 26, 1978, Ser. No. 919,311

Claims priority, application Fed. Rep. of Germany, May 9, 1975, 2520816

Int. Cl.[2] C09B *29/34, 29/36, 29/38*; D06P *3/24*

U.S. Cl. 260—162 5 Claims

1. Methine dyestuff of the formula



wherein

R_1 is halogen, C_1–C_6 alkyl; C_1–C_6-alkyl substituted with carboxyl, hydroxyl, halogen, C_1–C_4 -alkoxy, cyano, C_1–C_4-alkoxy-carbonyl, or carboxylic acid amide; cyclopentyl or cyclohexyl unsubstituted or substituted with halogen or C_1–C_6-alkyl; benzyl, 2-phenylethyl or 2-phenylpropyl-(2) unsubstituted or substituted in the phenyl nucleus with halogen, cyano, nitro, C_1–C_4-alkoxy or C_1–C_6-alkyl; nitro; cyano; C_1–C_3-alkylcarbonyl; C_1–C_3-alkyl-sulphonyl; benzoyl; C_1–C_3-alkylcarbonylamino; C_1–C_3-alkylsulphonylamino, benzoylamino; amino; aminocarbonyl; aminosulphonyl; phenylsulphonyl; naphthylsulphonyl; C_1–C_4-alkoxy; phenoxy; naphthoxy; benzyloxy; 2-phenylethoxy; 2-phenylpropoxy; carboxyl; C_1–C_4-alkoxycarbonyl; phenoxycarbonyl; naphthoxycarbonyl; benzyloxycarbonyl; 2-phenylethoxycarbonyl; 2-phenylpropoxycarbonyl; phenylazo or phenylazo substituted with carboxyl, halogen, cyano, nitro, C_1–C_6-alkyl or C_1–C_4-alkoxy;

R_2 is C_1–C_6-alkyl unsubstituted or substituted with carboxyl, halogen, hydroxyl, C_1–C_4-alkoxy, cyano, C_1–C_4-alkoxycarbonyl, or carboxylic acid amide; C_2–C_6-alkenyl unsubstituted or substituted with halogen; cyclopentyl or cyclohexyl unsubstituted or substituted with halogen or C_1–C_4-alkyl; phenyl or naphthyl unsubstituted or substituted with halogen, carboxyl, cyano, nitro, C_1–C_6-alkyl or C_1–C_4-alkoxy; or benzyl, 2-phenylethyl or 2-phenylpropyl-(2) unsubstituted or substituted in the phenyl nucleus with halogen, cyano, nitro, C_1–C_4-alkoxy, or C_1–C_6-alkyl;

R_3 and R_4 are C_1–C_6-alkyl unsubstituted or substitued with carboxyl, halogen, hydroxyl, C_1–C_4-alkoxy, cyano, C_1–C_4-alkoxycarbonyl, or carboxylic acid amide; cyclopentyl or cyclohexyl unsubstituted or substituted with halogen or C_1–C_6-alkyl; or benzyl, 2-phenylethyl or 2-phenylpropyl-(2) unsubstituted or substituted in the phenyl nucleus with halogen, cyano, nitro, C_1–C_4-alkoxy or C_1–C_6-alkyl;

R_5, R_6, R_7 and R_8 are R_3 or R_4; or hydrogen; or phenyl or naphthyl unsubstituted or substituted with carboxyl, halogen, cyano, nitro, C_1–C_6-alkyl, or C_1–C_4-alkoxy; or R_6 and R_7 form a cyclohexane ring;

A is phenyl or naphthyl unsubstituted or substituted with halogen, cyano, nitro, C_1–C_6-alkyl, trifluoromethyl, phenyl, benzyl, C_1–C_4-alkoxy, phenoxy, benzyloxy, C_1–C_4-alkoxy, mono- or di-C_1–C_4-alkylamino, phenylamino, benzylamino, C_1–C_3-alkylcarbonylamino, formyl, C_1–C_3-alkylcarbonyl, benzoyl, carboxyl, C_1–C_4-alkoxycarbonyl, phenyloxycarbonyl, C_1–C_4-alkoxycarbonylmethyl or -ethyl, aminocarbonyl, mono- or di-C_1–C_4-alkylaminocarbonyl, C_1–C_4-alkylsulphonyl, phenylsulphonyl, C_1–C_4-alkyl- or phenyloxysulphonyl, aminosulphonyl, mono- or di-C_1–C_4-alkylaminosulphonyl, C_1–C_4-alkoxycarbonylamino, C_1–C_4-alkylaminocarbonylamino, sulpho, phenylazo or phenylazo substituted with carboxyl, halogen, cyano, nitro, C_1–C_6-alkyl or C_1–C_4-alkoxy; and wherein R_1 is phenylazo or substituted phenylazo or A is phenyl or naphthyl substituted with phenylazo or substituted phenylazo;

n is 0, 1 or 2; and

m is 1 or 2, but is 1 only if A is substituted with sulpho.

4,201,708

METHOD FOR FRACTIONATING THE WHOLE WHEAT KERNEL BY SEQUENTIAL MILLING

Ganta V. Rao, and Floyd K. Shoup, both of Hutchinson, Kans., assignors to Far-Mar-Co., Inc., Hutchinson, Kans.

Continuation of Ser. No. 831,905, Sep. 9, 1977, abandoned. This application May 30, 1978, Ser. No. 910,633

Int. Cl.[2] A23J 1/12

U.S. Cl. 260—112 G **22 Claims**

1. A process for fractionating the whole wheat kernel into its gluten and non-gluten endosperm components comprising the steps of:

a. tempering whole wheat kernels in water to a moisture content, by weight, in the range from 14% to saturation;

b. flaking the whole wheat kernels to a flake thickness in the range from 0.0005 to 0.025 inches;

c. milling the flakes into primarily bran-germ and endosperm particles, said bran-germ particles being larger than said endosperm particles, and said bran-germ and endosperm particles having a size distribution which is conducive to rapid and complete hydration and to effective and substantially complete component separation and recovery;

d. hydrating said particles in an additional quantity of water ranging from 65 to 85% by weight of said particles to be hydrated and in an amount just sufficient to achieve a saturation moisture content and agitating the particles and water to form a thick, dough-like mass;

e. water washing a major proportion of said nongluten endosperm components from said dough-like mass to leave a primarily gluten-containing agglomerate; and

f. separating and recovering vital wheat gluten from said agglomerate.

4,201,709

PROCESS FOR PRODUCING A LOW GOSSYPOL PROTEIN PRODUCT FROM GLANDED COTTONSEED

Ranjit S. Kadan; Donald W. Freeman; James J. Spadaro, all of New Orleans, and George M. Ziegler, Jr., Harahan, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 26, 1978, Ser. No. 910,153

Int. Cl.[2] A23J 1/14

U.S. Cl. 260—123.5 **5 Claims**

1. In a process for producing protein flour having reduced free gossypol content from glanded cottonseed wherein the process comprises the following steps:

(a) flaking dehulled, glanded cottonseed with a moisture content of about from 5% to 12% by weight,

(b) solvent extracting the cottonseed flakes to reduce fat content,

(c) desolventizing the solvent extracted flakes, and

(d) milling the desolventized flakes into a flour, the improvement wherein the moisture content of the cottonseed flakes is reduced to about from 1% to 2% by weight prior to solvent extraction, the fat content of the cottonseed flakes is reduced to about from 1% to 3% by weight, and air-classifying the flour to obtain a coarse fraction and a fines fraction, thereafter repeatedly air-classifying the fines fractions until a food grade flour with a free gossypol content of less than 0.045% is achieved.

4,201,710

AZO DYES OF THE PYRIDONE SERIES USEFUL FOR FLOWABLE PRINTING INKS

Walter Kurtz, Bad Durkheim; Dieter Horn, and Walter Ditter, both of Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

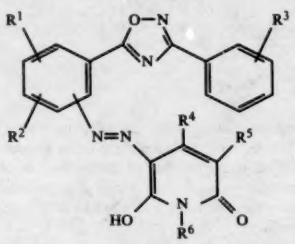
Filed Apr. 21, 1978, Ser. No. 898,672

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721955

Int. Cl.[2] C09B 29/36

U.S. Cl. 260—156 10 Claims

1. A compound useful for improving the flowability of pigment-containing printing inks which in the form of the free base corresponds to the formula



where

R^1 is hydrogen, chlorine, bromine, methyl, trifluoromethyl, methoxy, nitro or X,

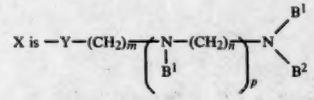
R^2 is hydrogen, chlorine or nitro,

R^3 is hydrogen, chlorine, bromine, methyl, methoxy, nitro or X,

R^4 is hydrogen or alkyl of 1 to 3 carbon atoms,

R^5 is cyano, carbamoyl or acetyl,

R^6 is hydrogen, C_1 to C_{16} alkyl, C_2 to C_8 alkyl substituted by hydroxy or C_1 to C_8 alkoxy, cyclohexyl, benzyl, phenylethyl and



m is 1, 2, 3 or 4

n is 2, 3, or 4

p is 0, 1, 2 or 3

Y is a direct bond, —CONH— or —SO_2NH—,

B^1 is hydrogen, C_1 to C_{13} alkyl or C_2 or C_3 alkyl substituted by hydroxy or C_1 to C_8 alkoxy,

B^2 is hydrogen, C_1 to C_8 alkyl; C_2 or C_3 alkyl substituted by hydroxy or C_1 to C_8 alkoxy; or cyclohexyl and

B^1 and B^2 together with the nitrogen are pyrrolidino, piperidino, methylpiperidino, morpholino, piperazino, N-methylpiperazino or N-β-hydroxyethylpiperazino with the proviso that the molecule contains at least one group X.

4,201,711

METHOD OF MANUFACTURING PRESTRESSED CONSTRUCTION ELEMENTS IN A LONG MOULD BED

Ove Thomsen, and Per-Erik Bondpers, both of Växjö, Sweden, assignors to A-Betong AB, Växjö, Sweden

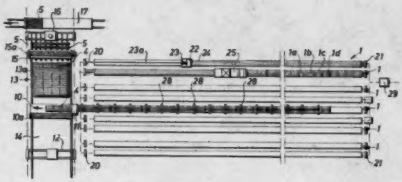
Filed Apr. 27, 1978, Ser. No. 900,624

Claims priority, application Sweden, Apr. 29, 1977, 7705021

Int. Cl.[2] B28B 23/04

U.S. Cl. 264—157 7 Claims

1. A method of manufacturing consecutive, pre-tensioned, concrete sleepers in a long mould bed, in which reinforcement ropes are tensioned and closure members are placed between different sleepers before the sleepers are cast, characterized by the ordered steps of: placing closure members in the mould bed at predetermined intervals prior to casting such that longitudinally successive cast sleepers are joined together by at least two spaced bridges of concrete projecting outwardly from the sleepers and surrounding the reinforcement ropes thereby



forming a string of joined sleepers which may be handled as a unit while decreasing the cross-sectional area of the concrete between adjacent sleepers to be subsequently cut, removing the cast sleepers from the mould bed in a longitudinal string of joined sleepers; longitudinally advancing the string of sleepers to a separating station at one end of the bed on conveying means movable along the bed axis, and cutting the string at the bridges to separate the string into individual sleepers.

4,201,712

PROCESS FOR PREPARATION OF 6-ARYL-4H-S-TRIAZOLO-[3,4-C]-THIENO-[2,3-E]-1,4-DIAZEPINES

Karl-Heinz Weber, Gau-Algesheim; Adolf Bauer, and Adolf Langbein, both of Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

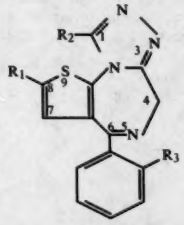
Continuation-in-part of Ser. No. 704,845, Jul. 13, 1976, abandoned. This application Mar. 31, 1977, Ser. No. 783,143

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1975, 2531677; Jul. 16, 1975, 2531678; Jul. 16, 1975, 2531679; Jul. 30, 1975, 2533924

Int. Cl.[2] C07D 495/14, 495/04, 409/04, 333/36

U.S. Cl. 260—244.4 6 Claims

1. A process for the preparation of a 6-aryl-4 H-s-triazolo-[3,4-c]-thieno-[2,3-e]-1,4-diazepine of the formula



wherein

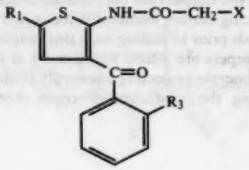
R_1 is hydrogen, halogen or alkyl of 1 to 2 carbon atoms;

R_2 is hydrogen, chlorine, bromine, straight or branched alkyl of 1 to 3 carbon atoms, ω-hydroxyalkyl of 1 to 3 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, tetrahydrofuranyl, tetrahydropyranyl, N-methyl-piperidyl or thienyl; and

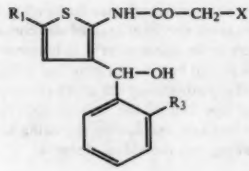
R_3 is hydrogen, fluorine, chlorine or bromine;

which comprises the steps of

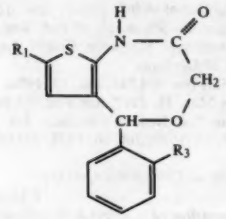
(a) reducing a compound of the formula



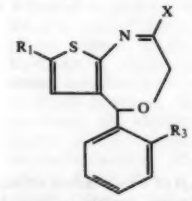
wherein
R_1 and R_3 have the meanings defined above, and
X is halogen, amino or carboxylic acyloxy,
with sodium borohydride in dimethylformamide or dimethylacetamide at temperatures between 0° and +10° C. to form a corresponding carbinol of the formula



wherein R_1, R_3 and X have the meanings defined above;
(b) treating the carbinol, optionally after conversion of the amino group into a halogen atom or after splitting off the acyl group, with a cyclization agent to form a carbonyl compound of the formula



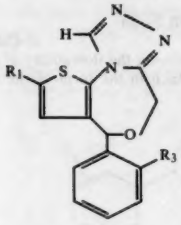
wherein R_1 and R_3 have the meanings defined above;
(c) converting the carbonyl group into the mercapto, a lower alkoxy or an alkylmercapto group or into a halogen atom by conventional methods to form a compound of the formula



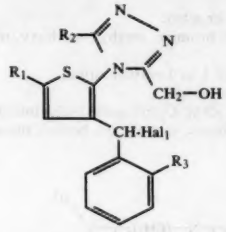
wherein
R_1 and R_3 have the meanings defined above, and
X is Sh—, lower alkoxy, alkylmercapto or halogen;
(d) reacting the compound thus obtained with a compound of the formula

$R_2—CO—NH—NH_2$

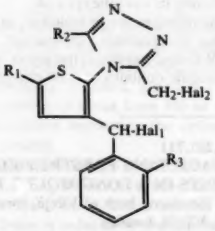
wherein R_2 has the meanings previously defined except chlorine and bromine;
(e) optionally chlorinating or brominating a compound of the formula



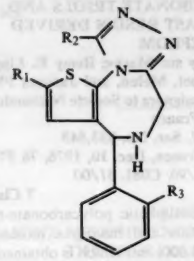
thus obtained, wherein R_1 and R_3 have the meanings defined above, with a chlorinating or brominating agent;
(f) cleaving the oxazepine ring of the compound at the oxygen atom by treating it with a strong hydrohalic acid;
(g) extracting the resulting hydrohalide of a compound of the formula



wherein
R_1 through R_3 have the meanings defined above and
Hal_1 is halogen, with a water-immiscible solvent;
(h) admixing the residue with a phosphorus halide or sulfur halide;
(i) reacting the resulting dihalo compound of the formula



wherein
R_1 through R_3 have the meanings defined above, and
Hal_1 and Hal_2 are halogen,
with ammonia or an ammonia-releasing substance to form a compound of the formula



wherein R_1 through R_3 have the meanings defined above; and

(j) dehydrogenating the resulting compound with a halogen or a compound of the higher oxidation stage of chromium or manganese.

4,201,713

NAPHTHOSTYRIL DYESTUFFS

Horst Harnisch, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

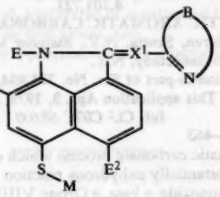
Filed Feb. 25, 1977, Ser. No. 772,324

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2608020

Int. Cl.[2] **C07D** *277/12, 285/08, 285/12*

U.S. Cl. 546—41 **1 Claim**

1. Dyestuff of the formula



wherein

E represents hydrogen, methyl, ethyl, β-cyanoethyl, β-chloroethyl, β-acetoxyethyl, β-methoxyethyl, β-ethoxyethyl, β-hydroxyethyl, β-carbomethoxyethyl, β-carboethoxyethyl, n-propyl, isopropyl, n-butyl, n-pentyl, benzyl, β-phenylethyl or phenyl or conjointly with E^1 represents $—CH_2—CH_2—CH_2—$;

M represents a phenyl radical which is optionally substituted by 1–5 chlorine atoms substituted by 1 or 2 bromine atoms, substituted by 1 or 2 C_1–C_2-alkyl groups, or monosubstituted by phenyl, methoxy, ethoxy, phenoxy, carboxylic acid C_1–C_2-alkyl ester, amino, acetylamino, or naphthyl, or conjointly with E^2 represents o-phenylene which is optionally monosubstituted by methyl, chlorine, bromine, methoxy or ethoxy;

X^1 represents =N-;

B represents the remaining members of 5-nitro-thiazole-(2)-, 3-phenyl-1,2,4-thiadiazole-(5), or 5-nitro-1,3,4-thiadiazole-(2)-;

E^1 represents hydrogen, ethyl, chlorine, bromine, phenylmercapto, tolylmercapto, or chlorophenylmercapto; and

E^2 represents hydrogen, chlorine, bromine, methoxy, ethoxy, phenylmercapto, tolylmercapto, or chlorophenylmercapto.

4,201,714

STABILIZED CATALYST COMPLEX OF RHODIUM METAL, BIDENTATE LIGAND AND MONODENTATE LIGAND

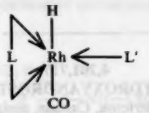
O. Richard Hughes, Chatham, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 825,896, Aug. 19, 1977. This application Jun. 20, 1978, Ser. No. 917,245

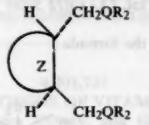
Int. Cl.[2] **C07D** *317/00, 323/02*

U.S. Cl. 260—340.9 R **5 Claims**

1. A stabilized catalyst complex of rhodium metal, bidentate ligand and monodentate ligand, said catalyst complex corresponding to the structural formula:



wherein L is a bidentate ligand having the formula:



where Z is an alicyclic structure; Q is a group VA element selected from nitrogen, phosphorus and arsenic; and R is an organic radical selected from aliphatic, alicyclic and aromatic groups containing between one and about 20 carbon atoms; and wherein L' is a monodentate ligand having the formula:

$$Q'R'_3$$

where Q' is a group VA element selected from nitrogen, phosphorus and arsenic; R' is an organic radical selected from aliphatic, alicyclic and aromatic groups containing between one and about 20 carbon atoms; and the steric parameter θ of $Q'R'_3$ in the catalyst complex is an apex angle between about 135 and 150 degrees.

4,201,715

PROCESS FOR THE ANILIDIZATION OF CARBOXYLIC ACID ESTERS

Wolfgang Deinhammer, and Hellmuth Spes, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,352

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800506

Int. Cl.[2] **C07D** *309/32*

U.S. Cl. 260—345.7 R **6 Claims**

1. A process for the anilidization of carboxylic acid esters of the general formula R_1COOR_2, which comprises reacting in fluid phase such esters in which R_1 is selected from the group consisting of cycloaliphatic radicals and substituted cycloaliphatic radicals having from 3–8 C-atoms, aromatic and substituted aromatic radicals, heterocyclic and substituted heterocyclic radicals, and

R_2 is a hydrocarbon radical with up to 4-atoms, in the presence of aniline with equimolar amounts of magnesium dianilide, aluminum trianilide, or a mixture of the two anilides.

4,201,716

PREPARATION OF 22-STEROID ACETALS

Leroy O. Krbechek, Golden Valley, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Mar. 27, 1978, Ser. No. 890,102
Int. Cl.[2] C07J 7/00, 9/00
U.S. Cl. 260—397.4 25 Claims

1. A process for separating 3-keto-4-pregnene-20-carboxaldehyde from a reaction mixture containing progesterone and said 20 steroid carboxaldehyde by the transformation of the aldehyde to the corresponding acetal followed by solvent extraction of the acetal and progesterone into separate fractions.

22. The 22-acetal of the corresponding 3-keto-4-pregnene-20-carboxaldehyde.

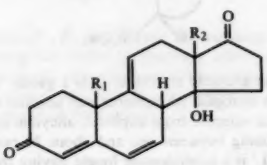
4,201,717

14β-HYDROXYANDROSTANES

Zdenek Valenta, Fredericton, Canada, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 811,393, Jun. 29, 1977, Pat. No. 4,134,920.
This application Oct. 12, 1978, Ser. No. 950,914
Int. Cl.[2] C07J 5/00
U.S. Cl. 260—397.45 22 Claims

1. A compound of the formula



wherein R_1 and R_2 are each independently lower alkyl and the optical antipodes and geometrical isomers thereof.

4,201,718

PRODUCTION OF HARDBUTTER

Jack T. Marsch, 373 Lyons Rd., Basking Ridge, N.J. 07920

Continuation of Ser. No. 643,139, Dec. 22, 1975, abandoned.
This application Nov. 1, 1978, Ser. No. 956,483
Int. Cl.[2] C11C 3/12; B01J 23/40
U.S. Cl. 260—409 9 Claims

1. A process for preparing a hard butter, which is suitable for use as a cocoa butter substitute in the manufacture of confectioneries without tempering, comprising hydrogenating a fat or oil having an iodine value within the range of 60 to 85 with a nickel catalyst containing 0.6 to 21 parts by weight sulfur per 100 parts of nickel until the absorption of hydrogen has substantially ceased.

4,201,719

PRECIOUS METAL NITROGENOUS ORGANO REACTION PRODUCTS

Anthony Liang, Half Moon Bay, Calif., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 21, 1977, Ser. No. 844,380
Int. Cl.[2] C07F 1/12, 15/00
U.S. Cl. 260—429 R 19 Claims

1. A composition consisting essentially of the reaction product of an ammonium salt of a monocarboxylic acid having an alkyl chain containing from about 6 to about 12 carbon atoms and a precious metal complex of a nitrogenous organic compound selected from primary, secondary and tertiary alkyl amines, imidazoles and amides wherein said precious metal is selected from gold and platinum.

4,201,720

ALIPHATIC POLYCARBONATE-TRIOLS AND MODIFIED AMINOPLAST RESINS DERIVED THEREFROM

Claude G. Passagne, Champigny sur Marne; Remy R. Lippler, Bergerac; Jean-Pierre G. Senet, Melun, and Jacques Plaza-net, Bergerac, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Nov. 22, 1977, Ser. No. 853,843
Claims priority, application France, Dec. 10, 1976, 76 37196
Int. Cl.[2] C07C 69/96; C08L 61/00
U.S. Cl. 260—463 7 Claims

1. A liquid aliphatic or cycloaliphatic polycarbonate-triol containing hydrophobic segments and having a molecular weight which is not more than 3,000, and which is obtained by a transesterification reaction between an aryl carbonate and a primary aliphatic triol and a mixture of two diols HOAOH and HOBOH, A and B being different, at least one of the radicals A and B being a hydrophobic radical, said diols being aliphatic or cycloaliphatic, said triol having a boiling point of at least 220° C.,

the proportion of said primary aliphatic triol used being such that there is statistically one molecule of the said triol per polymer chain the product, and

the ratio of said diols being such that the polycarbonate-triol obtained is equivalent to a mixture of a% by weight of a polycarbonate derived from the triol and the diol HOAOH alone, and of b% by weight of a polycarbonate derived from the triol and the diol HOBOH alone, the percentages a and b corresponding to the following two conditions:

$$30\% \leqq a\% \leqq 70\%$$

$$a\% + b\% = 100\%.$$

4,201,721

CATALYTIC AROMATIC CARBONATE PROCESS

John E. Hallgren, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 731,494, Oct. 12, 1976, abandoned. This application Apr. 3, 1978, Ser. No. 892,509
Int. Cl.[2] C07C 68/00
U.S. Cl. 260—463 56 Claims

1. An aromatic carbonate process which comprises contacting under substantially anhydrous reaction conditions, a phenol, carbon monoxide, a base, a Group VIIIB element selected from ruthenium, rhodium, palladium, osmium, iridium or platinum, and an oxidant having an oxidation potential greater than that of the said selected Group VIIIB element.

4,201,722

PROCESS FOR SEPARATING 4,4'-DIAMINODIPHENYLMETHANE

Kwok K. Sun, Hamden, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 4, 1976, Ser. No. 693,081
Int. Cl.[2] C07C 85/26
U.S. Cl. 260—570 D 5 Claims

1. A process for separating 4,4'-diaminodiphenylmethane in substantially pure form from admixtures thereof with the corresponding 2,4'-isomer which process comprises:

heating in the presence of an inert organic solvent a mixture consisting essentially of (a) the dihydrochloride of said mixture of isomers, and

(b) a mixture of 2,4'- and 4,4'-isomers of the corresponding free amines, the proportion of components (a) and (b) being such that the amount by weight of 4,4'-isomer of the free amine in component (b) is at least equal to the amount by weight of 2,4'-isomer in the dihydrochloride component (a); and

separating the insoluble, substantially pure, dihydrochloride

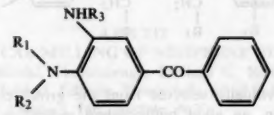
of 4,4'-diaminodiphenylmethane from the reaction product.

4,201,723
DIAMINE-BENZOPHENONES AND A PROCESS FOR THE PREPARATION THEREOF

Edit Toth; Jozsef Torley; Eva Palosi; Szaboles Szeberenyi; Laszlo Szporny; Sandor Gorog, and Csilla Meszaros, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Continuation of Ser. No. 658,997, Feb. 18, 1976, abandoned, which is a division of Ser. No. 485,744, Jul. 3, 1974, Pat. No. 3,989,701. This application Jun. 22, 1977, Ser. No. 808,952
Claims priority, application Hungary, Jul. 26, 1973, RI 518
Int. Cl.[2] C07C *97/10*
U.S. Cl. 260—570 AB 8 Claims

1. A compound of the formula



wherein

R_1 and R_2 each is a C_1 to C_{18} saturated or unsaturated, straight-chain or branched alkyl group, an aralkyl group with C_1–C_4 alkyl, a saturated or unsaturated C_3–C_8 cycloalkyl group or an aryl group, and

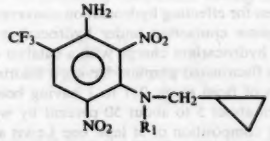
R_3 is hydrogen, or a pharmaceutically effective salt thereof.

4,201,724
N^3-(CYCLOALKYL)ALKYL-2,4-DINITRO-6-TRIFLUOROMETHYL-1,3-PHENYLENEDIAMINE COMPOUNDS

Don L. Hunter, Anaheim, and William G. Woods, Fullerton, both of Calif., assignors to United States Borax & Chemical Corp., Los Angeles, Calif.

Continuation of Ser. No. 551,480, Feb. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 383,004, Jul. 26, 1973, abandoned. This application Aug. 20, 1976, Ser. No. 716,487
Int. Cl.[2] C07C *87/62*
U.S. Cl. 260—577 3 Claims

1. A compound of the formula



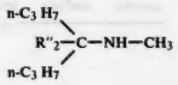
wherein R_1 is alkyl of 1 to 4 carbon atoms.

4,201,725
SECONDARY AMINES

Charles Pigerol, Saint-Ouen; Pierre Eymard, Fontaine; Jean-Claude Vernieres, Domene; Jean-Pierre Werbenec, Eysines, and Madeleine C. Epse Broll, Le Fontanil, all of France, assignors to Labaz, Paris, France

Continuation-in-part of Ser. No. 876,200, Feb. 9, 1978, abandoned, which is a continuation of Ser. No. 707,898, Jul. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 577,732, May 15, 1975, Pat. No. 4,026,925. This application Mar. 20, 1978, Ser. No. 888,187
Claims priority, application Belgium, May 20, 1974, 144519
Int. Cl.[2] C07C *87/08;* A61K *31/13*
U.S. Cl. 260—583 H 6 Claims

1. A methylamine derivative corresponding to the formula:



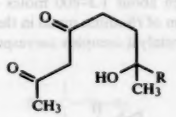
or a pharmaceutically acceptable acid addition salt thereof, wherein R''_2 represents n-propyl, isopropyl, isobutyl or allyl.

4,201,726
SYNTHESIS OF VITAMIN E

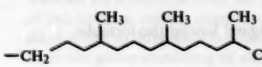
Gary L. Olson, Union County, and Gabriel Saucy, Essex County, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 797,713, May 17, 1977, Pat. No. 4,127,608. This application Sep. 11, 1978, Ser. No. 941,512
Int. Cl.[2] C07C *49/12;* C07D *311/72*
U.S. Cl. 568—413 2 Claims

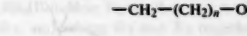
1. A compound of the formula:



wherein R is



or



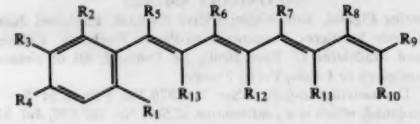
n is an integer from 0 to 1; and R_1 is tetrahydropyranyl, benzyl, ethoxyethyl, methoxymethyl, t-butyl, formyl acetyl, benzoyl, p-toluenesulfonyl and methanesulfonyl.

4,201,727
FLUORINATED AROMATIC POLYENES

Ka-Kong Chan, Hopatcong, and Beverly A. Pawson, Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 952,416, Oct. 18, 1978, which is a division of Ser. No. 809,738, Jun. 24, 1977, Pat. No. 4,137,246, which is a continuation-in-part of Ser. No. 722,939, Sep. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,028, Nov. 14, 1976, abandoned. This application May 10, 1979, Ser. No. 37,798
Int. Cl.[2] C07C *47/56, 49/44*
U.S. Cl. 568—442 4 Claims

1. A compound represented by the formula



wherein R_1, R_2 and R_3 are lower alkyl, R_4 is lower alkoxy, R_6 and R_8 are methyl or trifluoro methyl, R_9 is formyl, hydroxymethyl or alkoxymethyl, R_5, R_7, R_{10}, R_{11}, R_{12} and R_{13} are hydrogen or fluorine with the proviso that at least one of R_5, R_7, R_{10}, R_{11}, R_{12} or R_{13} is fluorine or at least one of R_6 or R_8 is trifluoro methyl.

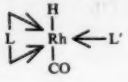
4,201,728

HYDROFORMYLATION CATALYST AND PROCESS

O. Richard Hughes, Chatham, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 19, 1977, Ser. No. 825,896
Int. Cl.² C07C 45/10
U.S. Cl. 568—454 **29 Claims**

1. In a process for the production of an alkanal-1 by hydroformylation of an alpha-olefin, the improvement which comprises contacting an alpha-olefin containing between about 3–30 carbon atoms with hydrogen and carbon monoxide at a temperature between about 25° C. and 150° C. and a pressure between about 15 and 3000 psi in the presence of a catalyst consisting essentially of a stabilized complex of rhodium metal, bidentate ligand and monodentate ligand, which catalyst components are provided in a molar ratio of 1 mole of bidentate ligand and between about 1.2–800 moles of monodentate ligand per gram atom of rhodium metal in the hydroformylation medium, and said catalyst complex corresponding to the structural formula:



wherein L is a bidentate ligand having the formula:

wherein Z is an alicyclic structure; Q is a group VA element selected from nitrogen, phosphorus and arsenic; and R is an organic radical selected from aliphatic, alicyclic and aromatic groups containing between one and about 20 carbon atoms; and wherein L′ is a monodentate ligand having the formula:

$$Q'R'_3$$

where Q′ is a group VA element selected from nitrogen, phosphorus and arsenic; R′ is an organic radical selected from aliphatic, alicyclic and aromatic groups containing between one and about 20 carbon atoms; and the steric parameter θ of $Q'R'_3$ in the catalyst complex is an apex angle between about 135 and 150 degrees.

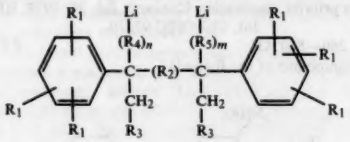
4,201,729

MULTIFUNCTIONAL LITHIUM CONTAINING INITIATOR

Lu H. Tung; Grace Y-S. Lo; Joseph W. Rakshys, and Douglas E. Beyer, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 859,356, Dec. 12, 1977, which is a continuation-in-part of Ser. No. 601,577, Aug. 1, 1975. This application Aug. 7, 1978, Ser. No. 931,797
Int. Cl.² C08F 4/48
U.S. Cl. 260—665 R **20 Claims**

1. A solution particularly suited for the initiation of polymerizing of vinyl group containing compounds which are polymerizable in the presence of a lithium containing catalyst, particularly vinyl hydrocarbon compounds, the solution comprising a major portion of a solvent selected from the group consisting of liquid aliphatic, cycloaliphatic and aromatic hydrocarbons and mixtures thereof and a minor proportion of a multifunctional lithium containing polymerization initiating compound of the Formula:



wherein

R_1 is individually selected from the group consisting of hydrogen, an alkyl hydrocarbon radical, a cycloalkyl hydrocarbon radical, alkoxy radical, and an aromatic radical with the further limitation that R_1 contains from 0 to 16 carbon atoms;

R_2 is a divalent organic radical having at least 6 carbon atoms, R_2 having at least one aromatic ring, the aromatic ring being directly attached to the carbon which is attached to the aromatic ring in the above formula, with the further limitation R_2 contains carbon and hydrocarbon, and optionally oxygen or sulfur, oxygen and sulfur when present are present only in the configuration of a diphenyl oxide or diphenyl sulfide,

R_3 is selected from the group consisting of alkyl, cycloalkyl, and aromatic radicals containing from 1 to 20 carbon atoms; and

R_4 and R_5 are individually selected from the group consisting of chemically combined units of 1,3-butadiene, isoprene and mixtures thereof where n+m is at least 20.

4,201,730

HYDROCARBON CONVERSIONS USING SOLID SUPERACID CATALYSTS BASED ON FLUORINATED GRAPHITE

George A. Olah, Shaker Heights, Ohio, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Division of Ser. No. 807,014, Jun. 16, 1977, Pat. No. 4,116,880. This application Feb. 16, 1978, Ser. No. 878,336
Int. Cl.² C07C 2/58
U.S. Cl. 585—730 **9 Claims**

1. A process for effecting hydrocarbon conversion reactions which comprises contacting under hydrocarbon conversion conditions a hydrocarbon charge with a catalyst composition comprising a fluorinated graphite having a fluorine to carbon atomic ratios of from about 0..1 to 1 having bonded thereto from between about 5 to about 50 percent by weight of the total catalyst composition of at least one Lewis acid selected from halides of the elements of Group II-A, III-A, IV-B, V or VI-B of the periodic Table.

4,201,731

CATALYTIC CODIMERIZATION OF NORBORNADIENE WITH PENTADIENE

James E. Lyons, Wallingford; Abraham Schneider, Overbrook Hills, and Harry K. Myers, Jr., Aston, all of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 819,444, Jul. 27, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,229

Int. Cl.[2] C07C *13/32*

U.S. Cl. 585—361 **10 Claims**

1. Process for the catalytic codimerization of norbornadiene with 1,3-pentadiene comprising:

(a) contacting norbornadiene and 1,3-pentadiene in the presence of a catalytic amount of a three-component homogeneous catalytic system consisting of cobaltic or cobaltous acetylacetonate, triphenylphosphine and one of the following alkyl aluminum chorides: diethylaluminum chloride, ethyl-aluminum dichloride and ethyl aluminum sesquichloride;

(b) having the contacting occurring at a temperature within the range from between about 20° C. to about 100° C.; and

(c) continuing the contacting until the norbornadiene-pentadiene codimer is prepared.

4,201,732

CHEMICAL MILLING OF NEOPRENE RUBBER

Leon E. Wolinski, Cheektowaga; Richard G. Riebling, Hamburg, and John H. Edholm, Tonawanda, all of N.Y., assignors to Pratt & Lambert, Inc., Buffalo, N.Y.

Division of Ser. No. 703,796, Jul. 9, 1976, Pat. No. 4,074,033. This application Sep. 26, 1977, Ser. No. 836,530

Int. Cl.[2] C08F *8/06*

U.S. Cl. 525—363 **3 Claims**

1. A process for improving the processability of a high molecular weight neoprene polymer which comprises treating a solution of said polymer in an organic solvent with an organic peroxide at room temperature in the presence of oxygen to reduce the molecular weight of said neoprene and lower the viscosity of said solution, wherein said organic solvent solution of neoprene further contains the components of an organic adhesive composition, said components being selected from the group consisting of additional resins, fillers, antioxidants or mixtures thereof.

4,201,733

PROCESS FOR PREPARING N-[(PHOSPHINYL)AMINO]THIO- AND N-[(PHOSPHINYL)AMINO]THIOMETHYLCARBAMATES

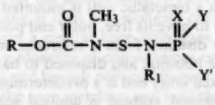
Stephen J. Nelson, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 765,807, Feb. 4, 1977, Pat. No. 4,081,536. This application Feb. 3, 1978, Ser. No. 874,960

Int. Cl.[2] C07F *9/22, 9/24*

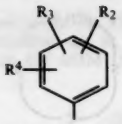
U.S. Cl. 260—968 **10 Claims**

1. A process for preparing compounds having the formula



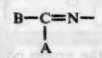
wherein R is selected from the group consisting of

a.

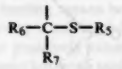


wherein R_2, R_3, and R_4 are the same or different and are selected from the group consisting of hydrogen, lower-alkyl of one to five carbon atoms, inclusive, halogen, lower-alkoxy of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, dialkylamino with each alkyl the same or different and having one to three carbon atoms, inclusive, and $N{=}CHN(CH_3)_2$;

b.



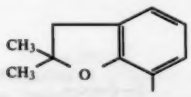
wherein A and B are the same or different and are selected from the group consisting of lower-alkyl of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, phenylthio wherein phenyl is unsubstituted or substituted with one to three substituents, same or different, selected from the group consisting of halogen and lower-alkyl of one to four carbon atoms, inclusive, monocyano substituted alkylthio of one to five carbon atoms, inclusive, cyano alkoxy having one to five carbon atoms, inclusive, phenyl, hydrogen, with the proviso that when A is hydrogen, B is of the formula



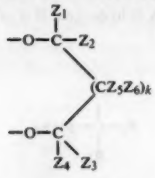
wherein R_5 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and phenyl; R_6 is alkyl of one to three carbon atoms, inclusive; R_7 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and SR_8, wherein R_8 is alkyl and is the same alkyl group as R_5, and taking R_5 and R_8 together with the atoms to which they are attached form a dithio heterocyclic of the formula

wherein n is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one or two methyl groups; A and B taken together with the carbon atom to which they are attached form a dithio heterocyclic of the formula

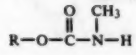
wherein m is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one to two methyl groups; and



R_1 is selected from the group consisting of lower-alkyl, phenyl, substituted phenyl, phenyl lower-alkyl, and cycloalkyl; X is oxygen or sulfur; Y and Y' are the same or different and are selected from the group consisting of lower-alkyl, lower-alkoxy, lower-alkylthio, cycloalkyl, phenyl, substituted phenyl, phenoxy, substituted phenoxy, thiophenoxy, and substituted thiophenoxy; and Y and Y' when taken together form the radical

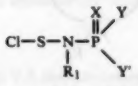


wherein Z_1 through Z_6 are the same or different and are selected from the group consisting of hydrogen, methyl and ethyl; and k is 0 or 1; which comprises reacting a compound having the formula



III

with a compound having the formula



II

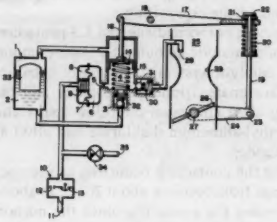
wherein R, R_1, X, Y, and Y' are the same as above, in the presence of a catalyst selected from the group consisting of cuprous chloride and aluminum chloride, and a suitable acid acceptor and a suitable polar solvent.

4,201,734

CARBURETOR

Takanori Ohnishi; Ken Shiozawa, both of Toyota, and Nobuo Shimizu, Ohbu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisan Kogyo Kabushiki Kaisha, both of Aichi, Japan

Filed Jun. 23, 1978, Ser. No. 918,571
Claims priority, application Japan, Oct. 28, 1977, 52-129963
Int. Cl.[2] F02M *7/08*
U.S. Cl. 261—34 B **4 Claims**



1. A carburetor for an internal combustion engine, said carburetor having an accelerator pump for pushing fuel contained in a first pump chamber of said pump into an air intake of said carburetor when said accelerator pump is operated during acceleration, the improvement comprising:

a second pump chamber whose one wall is formed by a diaphragm, said second pump chamber communicating with said first pump chamber via a throttle; and

a pressure control means for applying a controlled variable pressure to said pump chamber in a contracting direction, comprising:

an atmospheric chamber disposed in opposed relation to said second pump chamber and having said diaphragm as one wall thereof;

a spring provided in said atmospheric chamber biasing said diaphragm in a direction of contraction of said second pump chamber; and

a negative pressure delaying valve means coupled to said atmospheric chamber and to the atmosphere, said negative pressure delaying valve means having a check valve and a throttle provided in parallel thereby allowing air from said atmospheric chamber to flow unimpededly through said check valve to the atmosphere and delaying air from flowing from the atmosphere through said throttle into said atmospheric chamber, wherein said atmospheric chamber further communicates with the atmosphere via a control valve, said control valve being arranged and configured to open when the temperature of said engine is lower than a predetermined value and is closed when the temperature of said engine is greater than a predetermined value.

4,201,735

METHOD OF MANUFACTURING A CHOKE CONTROL DEVICE

Peter M. Byam, Shelby, N.C., assignor to Fasco Industries, Inc., Shelby, N.C.

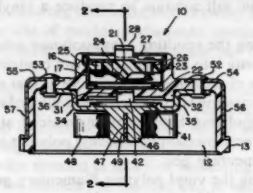
Filed Sep. 8, 1978, Ser. No. 940,707
Int. Cl.[2] F02M *1/12*
U.S. Cl. 261—39 E **4 Claims**

1. The method of manufacturing a choke control device of the type in which a bimetallic coil is mounted in a recess in a housing normally to have its free, outer end positioned a predetermined angular distance from a reference mark formed on the exterior of the housing, and disposed to have said free end rotate about its fixed inner end at a predetermined angular rate, when a predetermined voltage is applied across an electric heater that is mounted in the housing adjacent the coil, comprising

providing a housing having a circumferential recess in one end for receiving a bimetallic coil, and having on the exterior thereof a reference mark extending parallel to the axis of said recess,

providing a coil supporting member having a central, cylindrical stud portion, and a lateral flange portion projecting radially outwardly from said stud portion adjacent one end thereof,

securing the inner end of a bimetallic coil to said stud portion so that the free end of said coil is rotatable angularly about the axis of said stud portion upon predetermined changes in the ambient temperature of said coil,



temporarily fixturing the free end of said coil and forming a plurality of fastening holes in said flange portion of the supporting member, with the axis of at least one of said holes being angularly spaced said predetermined angular distance from said free end of the coil, and

securing said flange portion of said supporting member to the bottom of said recess with the axis of said one hole lying in a plane containing said reference mark and the axis of said recess, whereby said free end of said coil will be positioned said predetermined angular distance from said reference mark.

4,201,736

FLUID DISTRIBUTION AND CONTACTING ELEMENTS

Stephen R. Ellis, 63 Shelly Wick Rd., Birmingham, England (B29 7JE); Theodore R. Bott, 17 Springavon Croft, Harborne, Birmingham, England (B17 9BJ); Howard E. Kay, Sherwood Rd., Hall Green, Birmingham, England (B28 9HB), and Noel Hughes, The Spinney, Tyddesley Wood, Pershore, England

Filed Mar. 13, 1978, Ser. No. 885,800

Int. Cl.[2] B01F *3/04*

U.S. Cl. 261—98 **11 Claims**

1. An article for use as a packing element or turbulator, said article comprising at least two elongate core members twisted together to form a central core with gaps between the core members, and a plurality of convolutions comprising a plurality of filaments and having portions thereof trapped within the gaps between the core members and held thereby in a configuration such that the convolutions collectively extend in helical fashion about the central core.

4,201,737

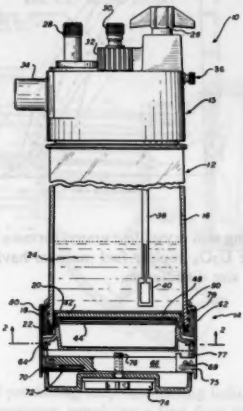
NEBULIZING APPARATUS

Douglas D. Carden, Barneveld, Wis., assignor to Airco, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 816,110, Jul. 15, 1977, abandoned. This application Aug. 30, 1978, Ser. No. 938,284

Int. Cl.[2] A61M *15/00*

U.S. Cl. 261—142 **3 Claims**



1. Nebulizer apparatus for generating a heated liquid-in-gas mist for administration to a patient in the course of aerosol therapy; said apparatus comprising in combination:

reservoir means for containing liquid to be dispersed in said gas; gas inlet means for providing an input of gas to said apparatus; means for mixing said liquid with said gas to form said mist;

mist outlet means for providing said mist toward said patient;

a normally downwardly concave thermally conductive heat transfer plate forming the bottom of said reservoir means; heating means underlying said reservoir means for heating said liquid, said heating means being separable from said reservoir and having a substantially flat surface;

fastening means for positively retaining said heating means in operative association with said reservoir in heat transmissive relationship with said heat transfer plate, said fastening means comprising draw clips secured to and extending upwardly from said heating means and being engaged with said reservoir means, and adjusting means adapted to move said draw clips to draw said heat transfer plate tightly against said substantially flat surface of said heating means to cause said heat transfer plate to lose its downward concavity and assume a substantially flat configuration against said heating means to establish and maintain good thermal contact therebetween.

4,201,738

PREPARATION OF U_3O_8

David R. Johnson, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 24, 1978, Ser. No. 936,460

Int. Cl.[2] G21C *21/00*

U.S. Cl. 264—0.5 **7 Claims**

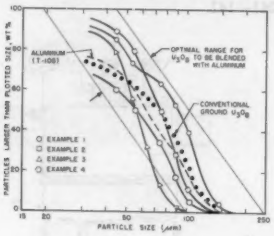
1. The method of directly preparing U_3O_8 nuclear fuel material having a controlled particle size distribution from an aqueous solution of uranyl nitrate which comprises

(a) contacting said uranyl nitrate solution with sufficient formic acid to effect a denitration of said solution and to form an unsaturated solution of uranyl formate;

(b) further contacting said unsaturated uranyl formate solu-

tion with additional formic acid in sufficient stoichiometric excess of formic acid to precipitate uranyl formate monohydrate from said solution;

(c) removing and drying said precipitate to provide a crystalline uranyl formate monohydrate; and



(d) calcining said crystalline uranyl formate monohydrate to produce U_3O_8 nuclear fuel material having a controlled particle size distribution.

4,201,739

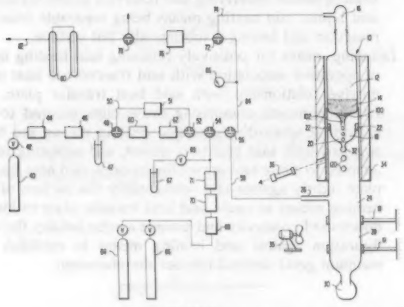
MANUFACTURE OF METAL HALIDE PARTICLES

Scott Anderson, P.O. Box 2680, Champaign, Ill. 61820

Filed Mar. 17, 1976, Ser. No. 667,581

Int. Cl.[2] B01J *2/04*

U.S. Cl. 264—13 **19 Claims**



1. In a process in which a purified lanthanide metal halide salt is melted and passed through a discharge conduit into an inert, quenching atmosphere of sufficient length and temperature to at least partially solidify particles containing purified lanthanide metal halide, the improvement which comprises promoting wetting of the lanthanide metal halide salt on the conduit without the addition of water to the quenching atmosphere, said promoting of wetting being effected by adding to said molten lanthanide metal halide a controlled amount of hydrogen halide effective to promote wetting of the lanthanide metal halide salt on the conduit during the discharge into the inert quenching atmosphere, the halide radical of the lanthanide metal salt and the halide radical of the hydrogen halide being of the same halogen species.

4,201,740

PROCESS FOR PURIFYING AND ACTIVATING AQUEOUS INORGANIC SALT SOLUTIONS EMPLOYED IN THE WET SPINNING OF FILAMENTARY VINYL POLYMERS

Rupert B. Hurley, Williamsburg, Va., assignor to Badische Corporation, Williamsburg, Va.

Filed Jun. 8, 1978, Ser. No. 913,638

Int. Cl.[2] D01F *13/00, 6/18*

U.S. Cl. 264—38 **4 Claims**

1. In the continuous process for producing a filamentary vinyl polymer including the procedural steps of

(a) polymerizing a vinyl monomer in a concentrated aqueous inorganic salt solution to produce a vinyl polymer solution;

(b) spinning the resulting vinyl polymer solution through a spinnerette into a coagulating bath containing an aqueous solution of the same inorganic salt as that employed in the polymerization step, the concentration of inorganic salt in the coagulating bath being maintained at a level which affords precipitation of the vinyl polymer to form a coherent filamentary gel;

(c) washing the vinyl polymer filamentary gel so produced;

(d) recovering the concentrated aqueous inorganic salt solution from the washing and coagulation steps by concentrating the combined effluents thereof, and

(e) recycling the recovered concentrated aqueous inorganic salt solution into the polymerizing step; in which process copper ion impurities accumulate in the recovered concentrated aqueous inorganic salt solution; the improvement in such process for removing copper ion impurities from the recovered aqueous inorganic salt solution and activating such recovered aqueous inorganic salt solution prior to the re-utilization thereof in the polymerization step, the improvement comprising:

(1) introducing a source of sulfide ion into the recovered aqueous inorganic salt solution in an amount sufficient to provide a concentration of about 2 to about 200 ppm of sulfide ion, based upon the concentrated aqueous inorganic salt solution; and

(2) removing precipitate resulting from said sulfide ion introduction.

4,201,741

BLOWN FILM PROCESS

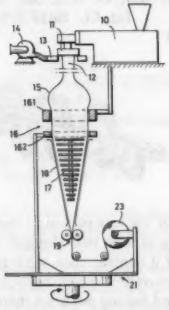
Heinrich Pannenbecker, Siebengebirgstr. 53, 5300 Bonn-Holzlar, Fed. Rep. of Germany

Filed Sep. 1, 1978, Ser. No. 938,773

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740629

Int. Cl.[2] B29D *23/04*

U.S. Cl. 264—40.1 **18 Claims**



1. In a blown film process for making plastic film bags and the like by extruding a film tubing and expanding the tubing by

the application of internal excess pressure so as to obtain a film bag which increases in diameter from a smallest diameter via a turning or transition point to a maximum diameter, and which is subsequently flattened, the improvement comprising:

controlling the diameter of the film tubing at a first measuring station located between the turning point site and the site of maximum diameter.

7. A blown film apparatus for making plastic film bags and the like by extruding a film tubing and expanding the tubing by the application of internal excess pressure so as to obtain a film bag which increases in diameter from a smallest diameter via a turning or transition point to a maximum diameter, said apparatus including means for controlling the diameter of the film tubing at a first measuring station located between the turning point site and the site of maximum diameter, comprising:

an annular extrusion die having an inside air inlet therethrough,

at least one guide ring arranged at a distance from the extrusion die for fixing the diameter of the film bag,

a flattening and take-off device situated on the other side of said guide ring from said extrusion die,

a scanning device situated at said first measuring station for monitoring the diameter of the film bag at said first measuring station, and

means for blowing air into the interior of said film tubing through said inside air inlet so as to apply said internal excess pressure, said means for blowing being controlled in response to the output of said scanning device so as to maintain the diameter of said film tubing at said first measuring station at a substantially constant predetermined value.

4,201,742

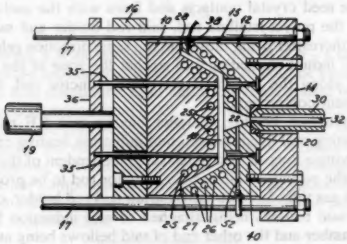
METHOD AND APPARATUS FOR INJECTION MOLDING FOAMED RESIN PRODUCTS HAVING A SMOOTH FINISH ON THEIR SURFACE

James W. Hendry, Howell, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 704,007, Jul. 9, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,048

Int. Cl.[2] B29D *27/00*; B29F *1/08*

U.S. Cl. 264—45.5 **15 Claims**



1. A process for injection molding a foamable thermo-plastic resin composition in a foam injection molding means having a cavity means therein comprising the steps of:

(a) closing said mold means;

(b) selectively flowing a condensable vapor heated above the heat distortion temperature of said resin into said mold cavity means;

(c) selectively exhausting said vapor and condensate from said mold cavity means;

(d) selectively venting said mold cavity means and injecting foamable thermoplastic resin into the preheated mold cavity means;

(e) reducing temperature of said mold cavity means; and

(f) opening said mold upon solidification of said resin and removing the solidified part.

4,201,743

METHOD OF MAKING SOAP BARS

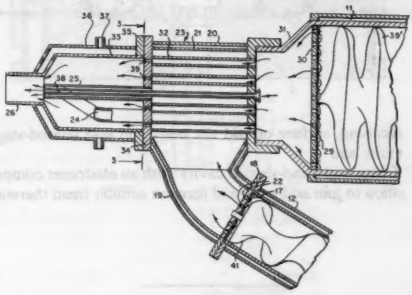
Guilio Perla, and Alessandro D'Arcangeli, both of Rome, Italy, assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 461,915, Apr. 18, 1974, abandoned, which is a continuation of Ser. No. 252,837, May 12, 1972, abandoned. This application Aug. 4, 1977, Ser. No. 821,852

Claims priority, application Italy, May 27, 1971, 50528 A/71

Int. Cl.[2] B29C *17/00*

U.S. Cl. 264—148 **6 Claims**



1. A method of producing soap bars having indicia incorporated therein comprising; supplying a first flow of base soap material through the barrel of a plodder and towards a plodder nozzle; discharging a second flow of an insert soap material thru an indicia forming die within said barrel; said insert soap material having substantially the same physical. characteristics including beta phase content as said base soap material mechanically working said base soap material through a plurality of tubular members having a predetermined inside diameter and a plurality of orifices having a diameter substantially smaller than said predetermined diameter to resuit in a beta phase content in said base soap material greater than 50% by weight, mechanically working said insert soap material through a plodder and said indicia forming die to result in a beta phase content of greater than 50% by weight, said insert soap material being discharged into the body of said base soap material as said base soap material enters said plodder nozzle, said second flow being in the same direction and at substantially the same rate as said first flow; extruding said base soap material through said plodder nozzle to form a continuous log of soap, said extruding step imparting an extrusion grain to said log of soap, and cutting said continuous log of soap into segments equal to the desired thickness of said soap bars.

4,201,744

METHOD OF MAKING TIRES

Charles L. Makinson, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 3, 1978, Ser. No. 921,925

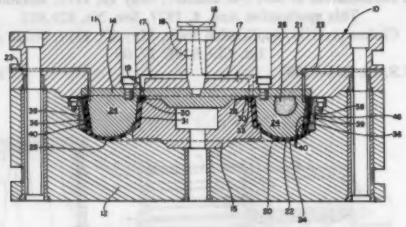
Int. Cl.[2] B29H *5/02, 17/38*

U.S. Cl. 264—250 **10 Claims**

1. A method of making a tire comprising:

A. molding two annular tire body parts, each in a first-stage mold having a core, said tire body parts each including a crown portion having a tread-receiving surface, a base portion, and a sidewall joining said crown portion and said base portion, said tire body parts each having integrally formed therewith a load-bearing structure intermediate its crown and its base, said structure having a plurality of webs formed by lobes of said core, said webs being spaced apart from one another in the circumferential direction of said tire, said webs extending in a direction generally parallel to the axis of rotation of said tire so that said lobes may be retracted from the molded part as a unit;

B. arranging said two annular tire body parts in a second-stage mold in the position they will have in the completed tire, forming a tire body having a tread-receiving surface, thereby defining a tread-shaped cavity between said tread-



receiving surface of said tire body and said second-stage mold; and

C. filling said tread-shaped cavity with an elastomer composition to join said parts and form an annular tread thereon.

4,201,745

AUTOCLAVE FOR CARRYING OUT OF MATERIAL CONVERSIONS UNDER HIGH TEMPERATURES AND HIGH PRESSURES

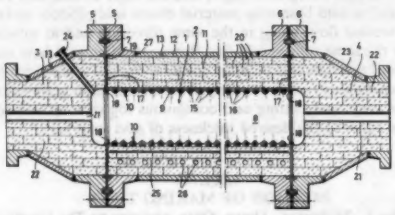
Karl Zickgraf, Erftstadt, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,966

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709699

Int. Cl.[2] B01J *3/04*

U.S. Cl. 422—199 **6 Claims**



1. A digester vessel for containing material subjected to a high temperature pulsating high pressure process comprising:

an inner enclosing metal wall of corrugated sheet material defining a high temperature high pressure chamber within;

an outer containing wall enclosing the inner wall and withstanding outwardly directed forces transmitted thereto from the inner wall due to pressure within the chamber;

means defining a vent opening through the outer wall for the free passage of expanding and contracting gas from between said walls to the atmosphere outwardly of the outer wall;

an intermediate layer between said inner and outer walls;

and an annular radial flange of corrosion and temperature resistant meterial extending between said inner and said outer walls and connected to each of said walls.

4,201,746

APPARATUS FOR ZONE REFINING

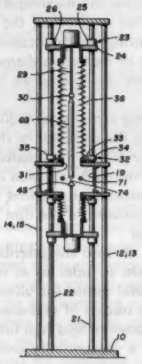
John W. Burd, Chesterfield; Bobbie D. Stone, Ballwin; William F. Tucker, Chesterfield, and Kedar P. Gupta, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 754,155, Dec. 27, 1976, Pat. No. 4,045,181. This application Jun. 13, 1977, Ser. No. 806,139

The portion of the term of this patent subsequent to Aug. 30, 1994, has been disclaimed.

Int. Cl.[2] B01J *17/10*

U.S. Cl. 422—250 **7 Claims**



1. In an apparatus for zone refining polycrystalline semiconductor rods to produce monocrystalline semiconductor rods, said apparatus having an RF induction heating coil, a rod holder and a seed holder aligned vertically above and below said heating coil, said rod holder being adapted to hold one end of a polycrystalline semiconductor rod to be refined and said seed holder being adapted to hold a seed crystal of said semiconductor, means for moving said rod holder relative to said RF induction heating coil to bring the free end of the polycrystalline semiconductor rod into proximity with said RF induction heating coil to melt said free end, and means for moving said seed holder relative to said RF induction heating coil so that the seed crystal contacts and fuses with the molten free end of the polycrystalline rod, said rod holder and said seed holder thereafter being moved in the same direction relative to said RF induction heating coil so that the zone of the melt is moved along the length of the semiconductor rod, the improvement comprising:

an induction heating chamber having said RF inductive heating coil fixed therein, said induction heating chamber having a longitudinal dimension independent of the length of the polycrystalline semiconductor rod to be processed;

a first gas tight bellows surrounding said rod holder, one end of said bellows being attached to said induction heating chamber and the other end of said bellows being attached to the base of said rod holder, the base of said rod holder having a gas tight magnetic fluid seal means for the rod between the chamber and rod rotation drive means, said bellows expanding and collapsing with the relative movement of said rod holder and said RF induction heating coil;

a second gas tight bellows surrounding said seed holder, one end of said bellows being attached to said induction heating chamber and the other end of said bellows being attached to the base of said seed holder, the base of said seed holder having a gas tight magnetic fluid seal means for the seed holder between the chamber and seed holder rotation means, said bellows expanding and collapsing with the relative movement of said seed holder and said RF induction heating coil; and

a plurality of telescoping metallic cylinders surrounding said seed holder, within said corresponding second gas tight

bellows, the largest of the telescoping metallic cylinders being attached in common with said second bellows to said induction heating chamber and the smallest of the telescoping steel cylinders being attached to the base of said seed holder, said plurality of telescoping metallic cylinders serving to protect said second bellows from molten semiconductor at all times when zone refining is taking place.

4,201,747
METHOD OF SEPARATING YTTRIUM IONS

Yukinori Minagawa, Ebina; Tsugio Kaneko, Tokyo, and Kunihiko Yamaguchi, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Oct. 6, 1978, Ser. No. 949,010

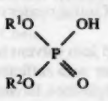
Claims priority, application Japan, Oct. 11, 1977, 52-121740; Apr. 19, 1978, 53-46094

Int. Cl.² C01F *17/00*

U.S. Cl. 423—21.5 **5 Claims**

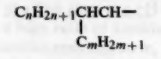
1. A method of selectively separating yttrium ions from the lanthanide ions without an additional seperation of the light rare earth ions, which comprises:

extracting the yttrium ions by contacting an aqueous solution of pH ranging from 2.0 to 5.0 containing yttrium ions and lanthanide (atomic number 57–71) ions in a combined concentration of 0.005 to 2 g atom/liter, and hydroxethyl ethylenediaminetriacetic acid, the ratio of said hydroxyethyl ethylenediaminetriacetic acid to yttrium ions and lanthanide ions ranging from 0.1 to 4 equivalents per equivalent of yttrium ions and lanthanide ions, with an extracting solvent containing tributyl phosphate and an acid phosphoric ester having the formula:



(I)

wherein R^1 and R^2 can be hydrogen and/or an alkyl group having the formula:



wherein n is an integer of 6 to 15 and m is n−1 or n−2 with the proviso that R^1 and R^2 cannot both be hydrogen, said acid phosphoric ester and tributyl phosphate ranging in concentration from 0.001 to 0.5 mole/liter and 20 to 80 volume percent respectively in said extracting solvent, wherein the volume ratio of said aqueous solution to said extracting solvent ranges from 0.2 to 5.0 whereby the yttrium component is concentrated in the extracting solvent and the lanthanide ions are concentrated in the aqueous solution phase.

4,201,748
PROCESS FOR THERMAL-ACTIVATION OF CHALCOPYRITE-PYRITE CONCENTRATES

Godefridus M. Swinkels, Rossland, and Dennis G. Maschmeyer, Fort Saskatchewan, both of Canada, assignors to Cominco Ltd., Trail and Sherritt Gordon Mines Limited, Toronto, both of, Canada

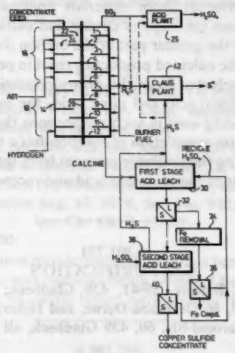
Filed Aug. 14, 1978, Ser. No. 933,401

Claims priority, application Canada, Aug. 19, 1977, 285111

Int. Cl.² C01G *3/12, 49/14*

U.S. Cl. 423—27 **10 Claims**

1. A process for treating metal sulfide concentrates containing chalcopyrite and pyrite for converting sulfidic iron to an acid leachable form and for rendering copper and other nonferrous metal values amenable for separate recovery, which comprises the steps of: heating said metal sulfide concentrates in an oxidizing zone to an elevated temperature in an oxidizing atmosphere for removal of labile sulfur and for formation of metal oxides by evolution and combustion of up to about 90% of total sulfur to be removed for converting said sulfidic iron and chalcopyrite to selectively acid leachable forms, contacting said delabilized metal sulfide concentrates containing metal oxides in a reducing zone with a reducing gas containing hydrogen in a concentration in the range of about 18 to 24% by volume capable of accepting sulfur whereby conversion of sulfidic iron in said sulfides to an acid leachable form is completed by evolution of H_2S gas concurrent with reduction of said metal oxides to sulfides, at least in part through reaction between metal oxides and H_2S, whereby said metal oxides are



a scavenger of said H_2S gas resulting in the formation of metal sulfides and water, maintaining a ratio of $H_2S/(H_2+H_2S)$ equal to or less than 0.1:1.0 in said reducing zone, and contacting said metal sulfide concentrates containing metal oxides in the oxidizing zone with a portion of said reducing gas and H_2S from said reducing zone and with an excess of oxygen for substantial combustion of said reducing gas and H_2S and labile sulfur to provide heat for said oxidizing zone to convert sulfur values to SO_2 for discharge from said oxidizing zone and to provide said oxidizing atmosphere to partially oxidize the metal sulfides to metal oxides whereby about 10 to 15% of iron in said metal sulfide concentrates in the oxidizing zone is oxidized to ferromagnetic oxides and off-gases from said oxidizing zone contains 1 to 6% by volume oxygen.

4,201,749
METHOD FOR THE SEPARATION OF PRECIPITATED ALUMINUM HYDROXIDE FROM SODIUM ALUMINATE SOLUTION

Koichi Yamada; Takuo Harato, and Hisakatsu Kato, all of Niihama, Japan, assignors to Sumitomo Aluminium Smelting Company, Ltd., Osaka, Japan

Filed May 8, 1979, Ser. No. 37,145

Claims priority, application Japan, May 8, 1978, 53-54803

Int. Cl.² C01F *7/14*

U.S. Cl. 423—127 **6 Claims**

1. In a process for separating precipitated aluminum hydroxide from a sodium aluminate solution by adding aluminum hydroxide as seed to a clarified aqueous solution of sodium aluminate to precipitate aluminum hydroxide, recycling a portion of the precipitated aluminum hydroxide, as seed, to the precipitation step for aluminum hydroxide, and washing the remaining portion of precipitated aluminum hydroxide, thereby withdrawing said aluminum hydroxide as product, an improvement for effectively and economically recovering caustic components and removing sodium oxalate contaminant from the seed aluminum hydroxide which comprises washing the seed aluminum hydroxide with a washing liquor having a substantially saturated concentration of sodium oxalate and little content of caustic to recover accompanying sodium alu-

minate therein, and secondly washing the seed with hot water, then recycling as seed for the precipitation step of aluminum hydroxide.

4,201,750

PROCESSING OF BREUNNERITE TO RECOVER MAGNESIUM COMPOUNDS

Frank Pitts, Magalas, France, assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Apr. 24, 1978, Ser. No. 899,168
Int. Cl.[2] C01F *5/30, 5/38, 5/40*
U.S. Cl. 423—162 **9 Claims**

1. A process for the preparation of magnesium compounds from breunnerite or from materials containing breunnerite which comprises the steps of drying and calcining the breunnerite to expel the greater part of the carbon dioxide contained in it, causing the calcined product to react in presence of water with an acid selected from the group consisting of sulphuric acid, hydrochloric acid and nitric acid, the calcined material and the acid being used in such proportions that the pH of the reaction mass on completion of reaction has a value between 6 and 7, separating the insoluble material from the solution of the magnesium salt of the aforesaid acid and recovering said magnesium salt.

4,201,751

GAS PURIFICATION

Heinz Holter, Beinstr. 39-41, 439 Gladbeck; Heinz Gresch, Dornestr. 89, 46 Dormund-Derne, and Heinrich Igelbuscher, Marcq-en-Baroeul-Str. 60, 439 Gladbeck, all of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 683,205, May 4, 1976, Pat. No. 4,061,476. This application Oct. 21, 1977, Ser. No. 844,185
Claims priority, application Fed. Rep. of Germany, May 6, 1975, 2520045; Dec. 9, 1975, 25552209; Mar. 4, 1976, 2608935; Apr. 10, 1976, 2615828; Oct. 21, 1976, 2647520
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—210 **14 Claims**

11. A process for removing contaminants from contaminated gas which comprises:

(a) introducing into and thus contacting a current of the contaminated gas with a combination of

(1) a solid-form absorption agent comprising dust developed during iron or steel production and containing Fe_2O_3 in combination with a member selected from the group consisting of an alkali-metal oxide and an alkaline-earth-metal oxide and

(2) expanded-perlite carrier,

(b) intimately admixing the absorption agent with the gas, and then

(c) separating the absorption agent from the gas.

4,201,752

PROCESS FOR THE SELECTIVE REMOVAL OF SULFUR DIOXIDE FROM EFFLUENT GASES

Alexander J. M. Kosseim, Rye; Gilbert R. Atwood, Briarcliff Manor, and Joseph E. Sokolik, Jr., Carmel, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,400
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—235 **6 Claims**

1. The process for the selective removal of sulfur oxides from gas mixtures containing at least such sulfur oxides and carbon dioxide which comprises:

(a) passing the gas mixture at a temperature below 80° C. through an absorber in countercurrent contact with an absorbent solvent composition consisting essentially of

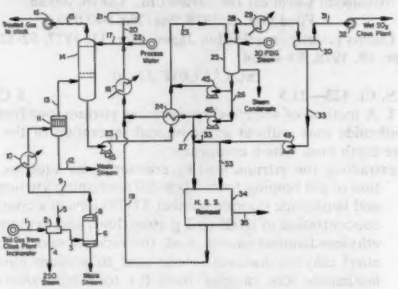
(1) from about 20 to about 60% by weight of monoethanolamine;

(2) from about 10 to about 40% by weight of sulfur dioxide such that the molar ratio of sulfur dioxide to available monoethanolamine is always greater than or equal to 0.5/1; and

(3) at least about 4% by weight water at a solvent composition flow to gas flow ratio such that the molar concentration of sulfur oxides to be absorbed therein does not exceed the molar concentration of water present;

(b) absorbing said sulfur oxides in said solvent composition;

(c) passing the aborbent solvent composition containing absorbed sulfur oxides at a maximum temperature of about 120° C., to at least one stripper tower and stripping the absorber sulfur dioxide from the absorbent solvent composition while maintaining the temperature in the stripper below 120° C.;



(d) removing from the stripper a stripped lean solvent bottom composition containing a maximum of about 40% by weight of sulfur dioxide and at least about one mole of water for each mole of sulfur oxides remaining in said lead solvent;

(e) recycling the stripped lean solvent bottoms from step (d) to the absorber together with sufficient water to provide a solvent absorbent composition having the same composition as defined in step (a); and

(f) removing from the stripper a vapor consisting essentially of sulfur dioxide and water.

4,201,753

FLUE GAS DESULFURIZATION PROCESS

William R. Dayen, Reading, Pa., assignor to Gilbert Associates, Inc., Reading, Pa.

Filed Jan. 26, 1978, Ser. No. 872,601
Int. Cl.[2] C01B *17/00*; C01C *1/24*
U.S. Cl. 423—242 **10 Claims**

1. The method of desulfurizing the flue gas products of combustion of carbonaceous fuel, comprising effecting the essentially complete combustion of said fuel in a combustion zone, spraying an impure solution containing mostly K_2CO_3 and KOH into the flue gas stream at low pressure immediately downstream of the combustion zone in a zone where the temperature is sufficiently high to vaporize, volatilize or decompose the potassium compounds present to form an ionic form of potassium, thereafter reacting the SO_2 present in the flue gas stream with the potassium ions in the presence of O_2 in excess of the stochiometeric requirement to form K_2SO_4, thereafter cooling the flue gas stream to temperatures below the melting points of the potassium compounds present condensing the K_2SO_4 to form K_2SO_4 particulates and depositing K_2SO_4 on the surfaces of other particulates present in the flue gas stream, subsequently removing essentially all of the particulates from the flue gas stream prior to the flue gas stream exiting to the atmosphere through a chimney stack, and finally water quenching all the removed particulates permitting hydraulic conveyance of the particulates to regeneration facilities.

4,201,754

METHOD FOR THE CONVERSION OF CALCIUM SULFOXY COMPOUNDS INTO CALCIUM CARBONATE COMPOUNDS IN SULFUR OXIDE TREATMENT PROCESSES

William E. Clark, Bethel Park, Pa., assignor to Continental Oil Company, Stamford, Conn.

Filed Dec. 5, 1978, Ser. No. 966,545
Int. Cl.[2] C01B 17/00; C01C 1/02; C01F 5/24; C01B 17/16
U.S. Cl. 423—242 8 Claims

6. A method for removing sulfur oxides from gaseous mixtures containing said sulfur oxides, said method consisting essentially of:

(a) contacting said gaseous mixtures with aqueous $CaCO_3$, to produce at least one calcium sulfoxy compound selected from the group consisting of $CaSO_x$ and $Ca(HSO_x)_2$ and their hydrates wherein x is 3 or 4 thereby removing said sulfur oxides from said mixtures;

(b) converting said $Ca(HSO_x)_2$ compounds into said $CaSO_x$ compounds by reacting said $Ca(HSO_x)_2$ compounds with $CaCO_3$ in the presence of water;

(c) reacting said $CaSO_x$ compounds with NH_3 and CO_2 in the presence of water to produce $NH_4(HSO_x)$ wherein x is 3 or 4 and $CaCO_3$;

(d) separating said $NH_3(HSO_x)$ and $CaCO_3$; and

(e) reacting said $NH_4(HSO_x)$ with carbon at a temperature from about 1200° to about 1600° F. and a pressure from about 0 to about 250 p.s.i.g. to produce NH_3, H_2S, and carbon oxides.

4,201,755

SULPHUR OXIDE REMOVAL FROM GAS

Abb A. Nofal, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 761,092, Jan. 21, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,707
Int. Cl.[2] C01B 17/00
U.S. Cl. 423—242 3 Claims

1. A method of removing SO_2 from other gases comprising the steps of:

contacting the SO_2 and other gases with a basic alkali metal aqueous solution in a first zone at a pH not greater than 6, which maintains a high ratio of bisulfite to sulfurous acid to increase the bisulfite concentration,

continually discharging solution from the first zone with a high concentration of bisulfite ions,

contacting the gases and remaining SO_2 from the first zone in a second zone with a basic alkali metal aqueous solution in which there is a high ratio of sulfite to bisulfite maintained by a relatively high pH not less than 6 wherein SO_2 from the first zone now forms ionized sulfurous acid to maintain a high ratio of sulfite ions to bisulfite ions,

Flowing the solution formed in the second zone as the contact solution in the first zone,

and discharging the gases from the second zone with the SO_2 reduced to a desired level.

4,201,756

GRANULAR CALCIUM HYPOCHLORITE COATED WITH AN INORGANIC SALT

Walter C. Saeman, Hamden, Conn.; Noel N. Coe, West Lake, La., and John P. Faust, Hamden, Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 548,653, Feb. 10, 1975, which is a continuation-in-part of Ser. No. 521,417, Nov. 6, 1974, which is a continuation-in-part of Ser. No. 276,615, Jul. 31, 1972, abandoned. This application Oct. 31, 1978, Ser. No. 956,311
Int. Cl.[2] A61K 33/20; C01B 11/06
U.S. Cl. 423—266 16 Claims

1. Coated rounded, solid granular calcium hypochlorite particles comprised of a core of calcium hypochlorite encapsulated with a plurality of layers of an inorganic salt other than calcium hypochlorite, wherein:

(a) said inorganic salt is an alkali metal salt selected from the group consisting of the chloride, chlorate, nitrate, bromide, bromate and sulfate of an alkali metal,

(b) said inorganic salt being admixed with sufficient alkaline material to form a coating which has a pH in dilute aqueous solution at ambient temperature of at least about nine or higher,

(c) the portion of said inorganic salt on said core ranges from about 4 to about 45 percent by weight of said particles, and

(d) said core ranges in diameter from about 200 to about 2000 microns and the outside diameter of said particles ranges from about 400 to about 5000 microns.

4,201,757

LARGE BORON NITRIDE ABRASIVE PARTICLES

Francis R. Corrigan, Westerville, Ohio, assignor to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 825,493, Aug. 18, 1977, abandoned, which is a division of Ser. No. 760, 853, Jan. 21, 1977, which is a continuation of Ser. No. 394,632, Sep. 6, 1973, abandoned. This application Sep. 15, 1978, Ser. No. 942,661
Int. Cl.[2] C01B 35/08
U.S. Cl. 423—290 8 Claims

1. Wurtzite boron nitride particles having a particle size of at least 50 microns, said particles being obtained by compression of recrystallized pyrolytic boron nitride along the C-axis.

4,201,758

BORON REMOVAL FROM ETHYLENE GLYCOL-MAGNESIUM CHLORIDE SOLUTIONS

Ronald J. Alsain, Richmond, Tex.; David G. Braithwaite, Village of Golf, Fla., and Ansell L. Reid, Sugar Land, Tex., assignors to Nalco Chemical Co., Oak Brook, Ill.

Filed Mar. 22, 1979, Ser. No. 22,666
Int. Cl.[2] C01F 5/30
U.S. Cl. 423—497 1 Claim

1. A method for removing boric acid and salts thereof from ethylene glycol-magnesium chloride solutions which contain at least 100 ppm of boron which comprises reducing the pH of such solutions below 7 and then adding thereto at least 3 moles of methanol based on the amount of boric acid or salt thereof present in said solution and then subjecting the thus-treated ethylene glycol-magnesium chloride solution to distillation at a temperature sufficient to remove trimethyl borate-methanol therefrom, thereby reducing the level of boron in the starting solution to not more than 35 ppm.

4,201,759

METHOD FOR REGENERATING CALCIUM SULFOXY COMPOUNDS PRODUCED IN THE COMBUSTION OF CARBONACEOUS FUELS IN FLUIDIZED BEDS

William E. Clark, Bethel Park, Pa., assignor to Continental Oil Company, Stamford, Conn.

Filed Dec. 5, 1978, Ser. No. 966,544
Int. Cl.[2] C01B 17/02
U.S. Cl. 423—567 A 5 Claims

1. In a method for combusting carbonaceous sulfur-containing fuels in a fluidized bed wherein said fluidized bed contains at least one calcium compound selected from the group consisting of CaO, $Ca(OH)_2$, $CaCO_3$ and $Ca(HCO_3)_2$ to absorb sulfur oxides formed during combustion of said carbonaceous fuel to produce calcium sulfoxy compounds having the general formula $CaSO_x$ wherein x is 3 or 4 the improvement comprising:

(a) withdrawing a stream of fluidized bed solids containing said $CaSO_x$ and mixing said fluidized bed solids with water to produce a slurry;

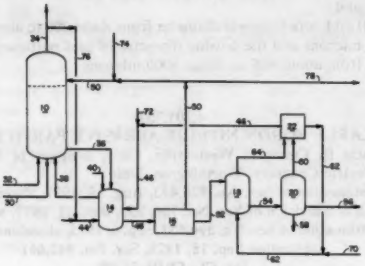
(b) reacting said $CaSO_x$ in said slurry with NH_3, H_2O and

CO_2 to produce watersoluble ammonium sulfoxy compounds and $CaCO_3$;

(c) separating said water-soluble ammonium sulfoxy compounds from said fluidized bed solids and said $CaCO_3$;

(d) recycling at least a portion of said $CaCO_3$ to said fluidized bed.

(e) reacting said water-soluble ammonium sulfoxy compounds with H_2S at a temperature from about 300° to about 600° F. and a pressure from about 150 to about 2000 psig to produce ammonium polysulfide;



(f) thermally decomposing said ammonium polysulfide at a temperature from about 200° to about 300° F. to produce NH_3, H_2S and sulfur;

(g) recycling said NH_3 to step (b) to the reaction of said $CaSO_x$ with NH_3, H_2O and CO_2;

(h) recycling said H_2S to step (e) to the reaction of said water-soluble ammonium sulfoxy compounds with H_2S; and,

(i) recovering at least a portion of said sulfur.

4,201,760

MOLTEN SALT SYNTHESIS OF LITHIUM META-ALUMINATE POWDER

Ronald H. Arendt, and Matthew J. Curran, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,734
Int. Cl.[2] C01F 7/04
U.S. Cl. 423—600 **7 Claims**

1. A process for producing lithium meta-aluminate powder which consists essentially of forming a mixture of a particulate lithium salt reactant selected from the group consisting of lithium hydorxide, lithium nitrate, lithium carbonate and mixtures thereof in at least stoichiometric amount of particulate precursors for said lithium salt reactant, a particulate aluminum salt reactant selected from the group consisting of aluminum hydroxide, alpha-alumina, gamma-alumina and mixtures thereof in at least stoichiometric amount of particulate precursors for said aluminum salt reactant, and an alkali chloride salt selected from the group consisting of sodium chloride, potassium chloride, lithium chloride and mixtures thereof, said alkali chloride salt being used in an amount of at least about 20% by weight of the total amount of said reactants and said chloride salt, heating said mixture to a reaction temperature at least sufficient to melt said chloride salt, said precursors decomposing completely at or below said reaction temperature to form said reactant and by-product gas, said salt in molten form being a solvent for said reactants, maintaining said reaction temperature dissolving and reacting said reactants in said molten salt and precipitating said lithium meta-aluminate, and recovering said precipitated lithium meta-aluminate by dissolving said chloride salt and separating said precipitated lithium meta-aluminate from the resulting salt solution.

4,201,761

PROCESS FOR MAKING IRON OXIDE OF CONTROLLED PARTICLE SIZE

Walter H. Seltzer, West Chester, Pa., assignor to Suntech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 802,597, Jun. 2, 1977, abandoned. This application Jun. 23, 1978, Ser. No. 918,215
Int. Cl.[2] C01G 49/02
U.S. Cl. 423—633 **3 Claims**

1. A process for preparing a hydrated ferric oxide of large particle size useful for conversion to magnetic iron oxide which comprises continuously adding an oxygen-containing gas to a vigorously agitated suspension of ferric oxide at a temperature between room temperature and about 75° C. and at a pH of from about 5.0 to about 8.5 while continuously adding an aqueous solution of a ferrous salt at a rate which maintains the concentration of iron ions in the solution below about 200 mgm per liter so that no new crystals of ferric oxide form and maintaining said suspension of ferric oxide while said aqueous ferrous salt solution is added for a time sufficient to form large crystals having a particle size greater than about 2.0×0.1 microns and separating said large size hydrated ferric oxide crystals from the aqueous suspension.

4,201,762

TRANSPARENT RED IRON OXIDE PIGMENTS AND PROCESS FOR PRODUCING SAME

James E. Daly, Hudson Falls, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,078
Int. Cl.[2] C01G 49/06; C09C 1/24
U.S. Cl. 423—633 **6 Claims**

1. A process for producing transparent red iron oxide pigments having improved optical qualities comprising forming a dry mixture of particulate alpha-ferric oxide hydrate and at least 0.2 part per part of hydrate of at least one salt selected from the group consisting of alkali metal nitrates and nitrites, heating the mixture to a temperature above the melting point but below the decomposition temperature of said salt until the desired red shade of ferric oxide is obtained, separating the ferric oxide from the salt in water whereby the salt is dissolved, and recovering the separated oxide as a pigment.

4,201,763

SOLID PHASE IMMUNOFLUORESCENT ASSAY METHOD

James F. Monthony, Albany; Michael W. Burgett, Half Moon Bay, and Robert V. Dahlstrom, San Rafael, all of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Continuation of Ser. No. 621,197, Oct. 9, 1975, abandoned. This application Feb. 6, 1978, Ser. No. 875,475
Int. Cl.[2] G01N 21/00, 21/38, 31/22, 33/16
U.S. Cl. 424—8 **25 Claims**

1. An immunofluorescent assay comprising:

providing a plurality of water insoluble hydrophilic polymeric particles of about 0.1–10 microns in size which form a substantially homogeneous aqueous suspension and having covalently bonded thereto an immune reactant immunologically related to an unknown immune reactant to be determined, providing a sample of unknown immune reactant to be determined, providing an appropriate amount of fluorescently labeled immune reactant immunologically related to said unknown, reacting said particles, sample, and labeled immune reactant to immunologically bind said particles in aqueous solution with a quantity of said labeled immune reactant proportional to the concentration of said unknown, physically separating all of said particles from said aqueous solution thereby separating the particles from unbound labeled immune reactant remaining in the aqueous solution, and measuring the fluorescence of an aqueous suspension of said separated particles by fluorometry, the fluorescence of labeled im-

mune reactant bound to said particles being quantitatively related to the concentration of said unknown immune reactant.

24. An immunofluorescence assay comprising:

providing a plurality of water insoluble hydrophilic polymeric particles of about 0.1–10 microns in size which form a substantially homogeneous aqueous suspension and having covalently bonded thereto antigen and hapten corresponding to unknown antigen or hapten to be determined immunologically, competitively binding said particles and unknown antigen or hapten to be determined in aqueous solution with a preselected limited amount of fluorescently labeled homologous antibody to bind a portion of said labeled antibody with said particles, physically separating all of said particles from said aqueous solution thereby separating the particles from unbound labeled immune reactant remaining in the aqueous solution, and measuring the fluorescence of a fluid suspension of said separated particles in a fluorometer, the fluorescence of labeled immune reactant bound to said particles being quantitatively related to the concentration of unknown antigen or hapten.

25. An immunofluorescence assay comprising:

providing an aqueous solution containing unknown antigen or hapten to be determined, providing fluorescently labeled corresponding antigen or hapten, competitively immunologically binding said labeled antigen or hapten and unknown antigen or hapten with a limited quantity of a homologous first antibody, adding a plurality of water insoluble hydrophilic particles of about 0.1–10 microns in size which form a substantially homogeneous aqueous suspension and having covalently bonded thereto a second antibody immunologically reactive with the reaction product of labeled antigen or hapten and unknown antigen or hapten with said first antibody for reaction therewith, physically separating all of the particles from unbound fluorescently labeled antigen or hapten remaining in the aqueous solution, and measuring the fluorescence of a fluid suspension of said separated particles in a fluorometer, the fluorescence of labeled immune reactant bound to said particles being quantitatively related to the concentration of unknown antigen or hapten.

4,201,764
SPRAY DISINFECTANT AEROSOL

Floyd R. French, and Janet N. Paige, both of Midland, Mich., assignors to Calvin N. Goeders, Midland, Mich.

Continuation-in-part of Ser. No. 351,210, Apr. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 323,754, Jan. 15, 1973, abandoned. This application Feb. 25, 1976, Ser. No. 661,090

Int. Cl.[2] A61L *9/04*

U.S. Cl. 424—45 **11 Claims**

1. A pressurized single phase disinfectant composition consisting essentially of from 7 to 45 weight percent water and from 53 to 91 weight percent ethanol the balance being propane all compositions restricted to those falling within the area MKLO of the accompanying graph.

4,201,765
PREPARATION FOR TREATING DERMATITIS IN THE NATURE OF TINEA PEDIS

Stephen Sichak, Dolton, Ill., assignor to Scholl, Inc., Chicago, Ill.

Division of Ser. No. 754,694, Dec. 27, 1976, Pat. No. 4,147,770. This application Sep. 20, 1978, Ser. No. 944,154

Int. Cl.[2] A61L *9/04*; A01N *9/24*; A61K *31/11*

U.S. Cl. 424—45 **4 Claims**

1. The method of treating athlete's foot which comprises exposing the tinea pedis infected area of the skin to the antifungal and antibacterial action of vanillin.

4,201,766
HAIR CONDITIONING COMPOSITION AND METHOD OF USING THE SAME

Jean-François Grollier, and Chantal Fourcadier, both of Paris, France, assignors to L'Oreal, Paris, France

Filed Feb. 27, 1978, Ser. No. 881,512

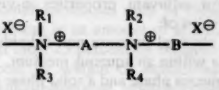
Claims priority, application France, Mar. 2, 1977, 77 06044

Int. Cl.[2] A61K *7/06*

U.S. Cl. 424—70 **19 Claims**

1. A cosmetic composition in lotion, cream, gel or emulsion form for conditioning the hair comprising

(1) in combination at least one crosslinked polyaminoamide and at least one cationic polymer having recurring units of the formula



wherein

R_3 and R_4 each independently represent alkyl having 1–3 carbon atoms,

R_1 and R_2 each independently represent alkyl having 1–3 carbon atoms or hydroxyalkyl having 1–3 carbon atoms, or when $R_2=R_4=CH_3$ and $R_1=R_3$, R_1 and R_3 can represent alkyl having 4–8 carbon atoms, or when $R_2=R_4=R_1=CH_3$, R_3 can represent benzyl, cyclohexyl or alkyl having 4–12 carbon atoms,

A and B, each independently, represent linear or branched alkylene having 2–20 carbon atoms in the chain, $—(CH_2)_n—(CH_2)_n—$, $—CH_2—C_6H_4—CH_2—$ or $—CH_2—CH(OH)—CH_2—$, n being a whole number equal to 2 or 3,

$X^{\ominus}$ is an anion and

Z represents either —O— or —NH—CO—NH—, wherein said crosslinked polyamino-amide is present in an amount of 0.1 to 5 weight percent and said quaternized polymer is present in an amount of 0.1 to 10 weight percent, based on the total weight of said composition, and

(2) an effective amount of at least one of (i)-(iv), defined below, to provide said lotion, cream, gel or emulsion:

(i) water, alcohol or mixtures thereof;

(ii) soap or C_{12}–C_{18} natural or synthetic alcohols with emulsifiers;

(iii) thickening agent; or

(iv) mixtures of oils, waxes, or both with fatty alcohols and polyethoxylated fatty alcohols.

4,201,767
VIRAL LIPOSOME PARTICLE

Wardle Fullerton, King of Prussia, and Bohdan Wolanski, Norristown, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 8, 1978, Ser. No. 958,778

Int. Cl.[2] A61K *39/18*

U.S. Cl. 424—89 **4 Claims**

1. A spikoliposome particle comprising a liposome having attached to its outer surface the intact outer membrane layer of influenza virus having intact spikes attached by having been reacted with both a positively-charged fatty acid amine of from 12 to 20 carbon atoms and a phospholipid.

4,201,768

PROCESS FOR OBTAINING AGENTS HAVING MITOGENIC AND/OR ADJUVANT PROPERTIES FROM NOCARDIA CELLS AND COMPOSITIONS CONTAINING SUCH AGENTS

Rita Ciorbaru nee Sfartz, Fontenay-aux-Roses; Constantin Bona; Louis Chedid, both of Paris; Edgar Lederer, Sceaux, and Jean-Francois Petit, Paris, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Sein, France

Filed Mar. 28, 1977, Ser. No. 782,193

Claims priority, application France, Mar. 26, 1976, 76 08972

Int. Cl.[2] A61K *39/02, 35/74*

U.S. Cl. 424—92 **36 Claims**

1. A method for obtaining a water-soluble agent having mitogenic and/or adjuvant properties in-vivo and in-vitro comprising the steps of:

rupturing by physical pressure non-delipidated whole cells of Nocardia within an aqueous medium,

forming an aqueous phase and a solid phase comprising cells including ruptured cells, and

separating the solid phase and recovering the aqueous phase, which phase is virtually free of cell wall constituents also of the peptidoglycan constituents, but having constituents of the cell cytoplasm, the aqueous phase having adjuvant and/or mitogenic properties.

4,201,769

ANTIBIOTIC SUBSTANCES NO. 17927A$_1$ AND NO. 17927A$_2$ AND PROCESS FOR PRODUCING THE SAME

Yasuhiro Itoh; Masaki Nakahara; Yo Takiguchi; Mamoru Arai; Tatsuo Haneishi; Masatoshi Inukai, and Mutsuo Nakajima, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Feb. 28, 1978, Ser. No. 882,187

Claims priority, application Japan, Mar. 4, 1977, 52-23663

Int. Cl.[2] A61K *35/74;* **C12P** *1/06*

U.S. Cl. 424—117 **7 Claims**

5. A process for the production of antibiotic substances, substance No. 17927A$_1$ and substance No. 17927A$_2$, which comprises cultivating a substances No. 17927A$_1$ and No. 17927A$_2$-producing microorganism belonging to the genus Streptomyces, isolating said substances No. 17927A$_1$ and No. 17927A$_2$ from a cultured broth and separating said substance No. 17927A$_1$ from said substance No. 17927A$_2$; sodium salt of said substance No. 17927A$_1$ having the following properties;

(1) Color and shape of the substance: Pale yellow powder when freeze-dried

(2) Analysis (Found): 1st analysis; C, 44.89%; H, 5.66%; N, 9.02%; S, 7.00%; Ash, 14.27%; 2nd analysis; C, 42.86%; H, 5.35%; N, 8.21%; S, 6.70%; Ash, 17.54%.

(3) Molecular weight: 250–600 upon an elution pattern of gel filtration

(4) U.V. spectrum (as shown in FIG. 4): Absorption maximum in an aqueous solution at 298 nm ($E_{1cm}^{1\%}=192$) shifted to 282 nm ($E_{1cm}^{1\%}=160$) in 0.01 N HCl

(5) IR spectrum in KBr disc: as shown in FIG. 5

(6) NMR spectrum: 100 MHz NMR spectrum measured in D_2O by the use of TMS (tetramethylsilane) as an external standard as shown in FIG. 6

(7) Solubility: Easily soluble in water, soluble in methanol and insoluble in ethyl acetate, chloroform, benzene

(8) Color reaction: Positive in iodine, potassium permanganate, slow bleaching in iodoplatinate, but negative in ninhydrin reaction

(9) Antibacterial activity: Broad antibacterial activity against gram-positive and gram-negative bacteria including *Staphylococcus aureus, Bacillus subtilis, Escherichia coli, Klebsiella pneumonie, Proteus vulgaris, Proteus mirabilis, Proteus rettgeri, Enterobacter cloacae* and *Serratia marcescens*

(10) Synergistic effect: Inhibitory action of β-lactamase and synergistic effect by the combined use of penicillin-type or cephalosporin-type antibiotic substances ineffective against resistant strains producing β-lactamase and sodium salt of said substance No. 17927A$_2$ having the following properties;

(1) Color and shape of the substance: Pale yellow powder when freeze-dried

(2) Analysis (Found): C, 46.52%; H, 5.20%; N, 8.48%; S, 8.23%; Ash, 9.62%

(3) Molecular weight: 250–600 upon an elution pattern of gel filtration

(4) U.V. spectrum (as shown in FIG. 1): Absorption maximum in an aqueous solution at 306 nm ($E_{1cm}^{1\%}=490$) shifted to 260 nm ($E_{1cm}^{1\%}=512$) in 0.01 N HCl

(5) IR spectrum in KBr disc: as shown in FIG. 2

(6) NMR spectrum: 100 MHz NMR spectrum measured in D_2O by the use of DSS (sodium 2,2-dimethyl-2-silapentane-5-sulfonate) as an internal standard as shown in FIG. 3

(7) Solubility: Easily soluble in water, soluble in methanol and insoluble in ethyl acetate, chloroform, benzene

(8) Color reaction: Positive in iodine, potassium permanganate, slow bleaching in iodoplatinate, but negative in ninhydrin reaction

(9) Antibacterial activity: Broad antibacterial activity against gram-positive and gram-negative bacteria including *Staphylococcus aureus, Bacillus subtilis, Escherichia coli, Klebsiella pneumonie, Proteus vulgaris, Proteus mirabilis, Proteus rettgeri, Enterobacter cloacae* and *Serratia marcescens*

(10) Synergistic effect: Inhibitory action of β-lactamase and synergistic effect by the combined use of penicillin-type or cephalosporin-type antibiotic substances ineffective against resistant strains producing β-lactamase.

4,201,770

ANTIGENIC MODIFICATION OF POLYPEPTIDES

Vernon C. Stevens, Dublin, Ohio, assignor to The Ohio State University, Columbus, Ohio

Continuation-in-part of Ser. No. 622,031, Oct. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 462,955, Apr. 22, 1974, which is a continuation-in-part of Ser. No. 406,821, Oct. 16, 1973, which is a continuation-in-part of Ser. No. 357,892, May 7, 1973, abandoned. This application Aug. 25, 1978, Ser. No. 936,876

Int. Cl.[2] A61K *37/00;* **C07C** *103/52;* **A61K** *39/00*

U.S. Cl. 424—177 **24 Claims**

Baboon No.	Mating 1			Mating 2			Mating 3		
	PRE-MATING TITER (ng/ml)	OVULATED	PREGNANT	PRE-MATING TITER (ng/ml)	OVULATED	PREGNANT	PRE-MATING TITER (ng/ml)	OVULATED	PREGNANT
1374	108	+	–	110	+	–	97	+	–
1422	123	+	–	101	+	–	100	+	–
976	345	+	–	331	+	–	305	+	–
1068	95	+	–	89	+	–	91	+	+

1. A method for controlling fertility in primate animals having naturally occurring endogenous Chroionic Gonadotropin hormone by neutralizing the biological action of the endogenous hormone, comprising the steps of:

administering to said primate animal an immunologically effective amount of the hormone, a subunit thereof, a peptide fragment of the subunit or a synthetically derived peptide having a sequence analogous to at least a portion of said subunit;

said hormone, subunit, fragment or synthetically derived peptide being modified by the coupling thereof with a non-endogenous material to effect the formation, follow-

ing said administration, of antibodies having a specificity to endogenous Chorionic Gonadotropin;

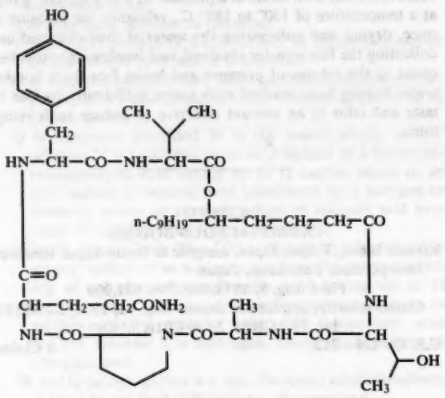
thereby inhibiting the fertility of said primate animal by preventing one or more normal biological functions of the endogenous Chorionic Gonadotropin hormone.

4,201,771
ANTIBIOTIC A43F

Janet C. Onishi, Mountainside; Gerald L. Rowin, Kendall Park, and John E. Miller, Jr., Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 12, 1979, Ser. No. 19,679
Int. Cl.[2] A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 5 Claims

1. The antibiotic A43F having the following structural formula:



4,201,772
STERILE AQUEOUS SOLUTION OF A MIXTURE OF ISOMALTO-OLIGOSACCHARIDES AND ITS USE FOR PARENTERAL ADMINISTRATION TO MAMMALS

Björn G. Ingelman; Ary W. Richter, and Kirsti A. Granath, all of Upsala, Sweden, assignors to Pharmacia Aktiebolag, Upsala, Sweden

Filed Mar. 28, 1978, Ser. No. 891,106
Claims priority, application United Kingdom, Apr. 19, 1977, 16162/77
Int. Cl.[2] A61K *31/70, 31/715*
U.S. Cl. 424—180 26 Claims

1. In the known method of parenterally administering to mammals, including man, clinical dextran having a weight average molecular weight (M_w) within the range 30,000 to 80,000, the improvement which comprises administering parenterally to the mammal, closely prior to or contemporaneously with the administration of said clinical dextran, an effective amount of a sterile aqueous solution for parenteral administration containing 0.02 to 30 g per 100 ml solution of a mixture of isomalto-oligosaccharides comprising

(a) 0–15 percent by weight of isomaltose,

(b) 20–65 percent by weight of isomaltotriose, isomaltotetraose and isomaltopentaose, each of these oligosaccharides being present in an amount of at least 5 percent by weight and at most 25 percent by weight,

(c) 20–65 percent by weight of isomaltohexaose, isomaltoheptaose, isomaltooctaose and isomaltononaose, each of isomaltohexaose and isomaltoheptaose being present in an amount of at least 5 percent by weight and at most 25 percent by weight and the total amount of isomaltooctaose and isomaltononaose being at least 5 percent by weight and at most 25 percent by weight,

0–30 percent by weight of said mixture being isomalto-oligosaccharides of 10 to 20 glucose units and 0–10 percent by weight of said mixture being isomalto-oligosaccharides of 15 to 20 glucose units,

the percentages being calculated on the total weight of the mixture of isomalto-oligosaccharides.

8. A method of improving clinical dextran having a weight average molecular weight (M_w) within the range 30,000 to 80,000 with respect to side effects on parenteral administration, characterized in that said clinical dextran is admixed with a mixture of isomalto-oligosaccharides comprising

(a) 0–15 percent by weight of isomaltose,

(b) 20–65 percent by weight of isomaltotriose, isomaltotetraose and isomaltopentaose, each of these oligosaccharides being present in an amount of at least 5 percent by weight and at most 25 percent by weight,

(c) 20–65 percent by weight of isomaltohexaose, isomaltohexaose, isomaltoheptaose, isomaltooctaose and isomaltononaose, each of isomaltohexaose and isomaltoheptaose being present in an amount of at least 5 percent by weight and at most 25 percent by weight and the total amount of isomaltooctaose and isomaltononaose being at least 5 percent by weight and at most 25 percent by weight,

0–30 percent by weight of said mixture being isomalto-oligosaccharides of 10 to 20 glucose units and 0–10 percent by weight of said mixture being isomalto-oligosaccharides of 15 to 20 glucose units,

the percentages being calculated on the total weight of the mixture of isomalto-oligosaccharides,

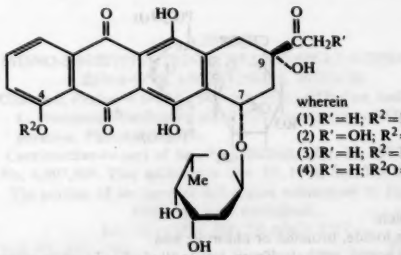
the proportions between said mixture of isomalto-oligosaccharides and said clinical dextran being 1 part by weight of said mixture of 0.5 to 500 parts by weight of said clinical dextran.

4,201,773
7-O-(2,6-DIDEOXY-α-L-LYXO-HEXOPYRANOSYL)-DAUNOMYCINONE, DESMETHOXY DAUNOMYCINONE, ADRIAMYCINONE, AND CARMINOMYCINONE

Derek Horton, Columbus, Ohio; Wolfgang Weckerle, Messel; Ernst F. Fuchs, Freiburg, both of Fed. Rep. of Germany; Tak M. Cheung, Sydney, Australia; Beat Winter, Berkeley, Calif., and Roderick J. Sorenson, Ann Arbor, Mich., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jul. 26, 1978, Ser. No. 928,252
Int. Cl.[2] A61K *31/71*; C07H *15/24*
U.S. Cl. 424—180 11 Claims

6. A method of treating murine leukemia in mice which comprises injecting a mouse infected with P388 leukemia with a biologically palliative amount and in a dosage regimen of up to 22 days of a compound selected from



wherein
(1) R′=H; R²=Me
(2) R′=OH; R²=Me
(3) R′=H; R²=H
(4) R′=H; R²O=H

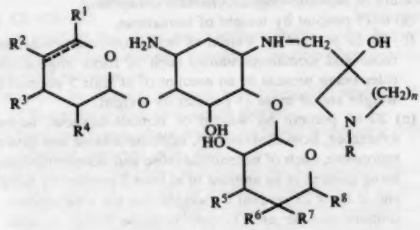
4,201,774

NOVEL AMINOGLYCOSIDE DERIVATIVES

Kikuo Igarashi, Itami, and Tamio Sugawara, Mino, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Nov. 14, 1978, Ser. No. 960,559
Claims priority, application Japan, Dec. 29, 1977, 52-158496
Int. Cl.[2] A61K *31/71*; C07H *15/24*
U.S. Cl. 424—180 9 Claims

1. An aminoglycoside derivative represented by the formula:



wherein R is hydrogen, lower alkyl, benzyl, phenethyl or phenylpropyl;
R^1 is aminomethyl, hydroxymethyl, 1-aminoethyl or 1-methylaminoethyl;
R^2, R^3, and R^6 each is hydrogen or hydroxy;
R^4 is hydroxy or amino;
R^5 is amino or methylamino;
R^7 is hydroxy or methyl;
R^8 is hydrogen or hydroxymethyl;
n is an integer of 1 to 3; and
the dotted line represents the presence or absence of a double bond
and the pharmaceutically acceptable acid addition salts thereof.

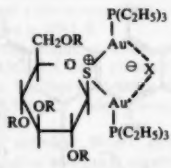
4,201,775

BIS[TRIETHYLPHOSPHINE)AURIO]SULFONIUM SUGARS

John J. Filan, Philadelphia, Pa.; Walter W. Holl, Cinnaminson, N.J., and George R. Wellman, Warminster, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Mar. 23, 1979, Ser. No. 23,364
Int. Cl.[2] A61K *31/70*; C07H *23/00*
U.S. Cl. 424—180 5 Claims

1. A chemical compound of the formula:



in which:
X is iodide, bromide or chloride; and
R is acetyl, methylsulfonyl, lower alkyl of 1–3 carbon atoms or N,N-dimethylcarbamyl.

4,201,776

FOOD ADDITIVE FOR REINFORCING FOODS DEFICIENT IN FIBER CONTENT

Ryoichi Naito, Ibaraki; Satoru Shiino, Uji, and Hirohisa Inahara, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 764,464, Jan. 31, 1977, abandoned. This application Sep. 22, 1978, Ser. No. 946,062
Int. Cl.[2] A61K *35/78*
U.S. Cl. 424—195 4 Claims

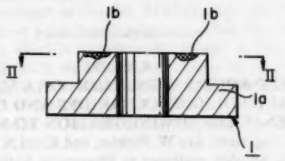
1. A method of reducing the symptoms of intestinal diverticulum in a person comprising orally administering to a person in need thereof a food additive consisting essentially of a powdered water-swellable fiber bundle of bamboo shoots belonging to the genus Phyllostachys for supplementing fibrous material in food deficient in vegetable fiber content, said food additive having been prepared by a process comprising heating bamboo shoots with steam at a pressure of 3 to 8 kg/cm^2 gauge at a temperature of 130° to 180° C., releasing the pressure at once, drying and pulverizing the material thus obtained and collecting the fine powder obtained, said bamboo shoots subsequent to the release of pressure and being free from bonded water having been washed with water sufficiently to lose its taste and odor in an amount effective to reduce such symptoms.

4,201,777

CARBONACEOUS BODIES

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Aug. 8, 1978, Ser. No. 931,909
Claims priority, application Japan, Aug. 11, 1977, 52/95527
Int. Cl.[2] C10M *7/04*; C01B *31/04*
U.S. Cl. 428—212 8 Claims



1. A carbonaceous body formed unitarily of carbon, and having at least one selected superficial portion graphitized in situ and a p value not greater than 0.6 determined by X-ray diffraction and defined in an expression: $d=3.440-0.086(1-P^2)$ where d is the mean stratic spacing of turbostratic carbon structure obtained from an X-ray diffraction diagram, said portion only constituting part of the body, the part of said body other than said selected superficial portion being composed of substantially nongraphitized or turbostratic carbon.

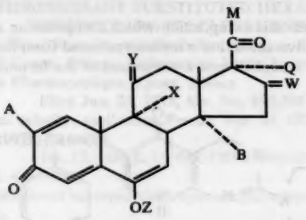
4,201,778

6-ACYLOXY-1,4,6-PREGNATRIENES, THEIR USE AS ANTI-INFLAMMATORY AGENTS, METHODS FOR THEIR MANUFACTURE, AND 6-OXO-1,4-PREGNADIENE INTERMEDIATES

Richard W. Draper, North Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Nov. 8, 1977, Ser. No. 849,563
Int. Cl.[2] C07J *71/00*; A61K *31/58*
U.S. Cl. 424—241 30 Claims

1. A 6-acyloxy-3,20-dioxo-1,4,6-pregnatriene of the following formula I:



wherein

A is hydrogen or, provided Y is (H,βOH), A is chlorine, fluorine or methyl;

B is hydrogen or, together with Q, is a 14α,17α-alkylidenedioxy derivative;

X is hydrogen, fluorine or chlorine;

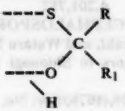
Y is oxygen, (H,βOH), (H,βOCOH); or (H,β-chlorine) or (H,β-fluorine) provided X is chlorine;

Z is hydrocarboncarbonyl, alkoxycarbonyl, thioalkoxycarbonyl, or thioalkoxythiocarbonyl wherein Z has up to 12 carbon atoms;

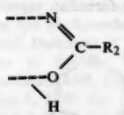
Q is hydrogen provided W is (H, lower alkyl); or OV wherein V is hydrogen or an acyl radical of a hydrocarboncarboxylic acid having up to 12 carbon atoms or an acyl radical of benzoic acid substituted by a halogen or methoxy group or an acyl radical of retinoic acid provided W is other than (H,α-retinoyloxy);

W is (H, lower alkyl); (H,α-OV$_1$) wherein V$_1$ is hydrogen or an acyl radical of an acid selected from the group consisting of a hydrocarboncarboxylic acid having up to 12 carbon atoms, benzoic acid substituted by a halogen or methoxy group, retinoic acid, and isonicotinic acid; =CHT wherein T is hydrogen, lower alkyl, fluorine or chlorine, and

W and Q taken together is a 16α,17α-lower alkylidenedioxy; a 16α,17α-cycloalkylidenedioxy; the grouping



wherein R and R$_1$ are lower alkyl; or the grouping



wherein R$_2$ is lower alkyl or phenyl;

M is —OR$_3$ when Q is O-acyl, R$_3$ being lower alkyl or halogeno lower alkyl; —CHO, acetals, hemiacetals and acylals thereof; —COOR$_4$ wherein R$_4$ is alkyl having up to 12 carbon atoms; —CH$_2$G wherein G is halogen having an atomic weight of less than 100 provided Q is not hydrogen, or G is OV$_2$ wherein V$_2$ is hydrogen, an acyl radical of an acid selected from the group consisting of a hydrocarboncarboxylic acid having up to 12 carbon atoms, benzoic acid substituted by a halogen or methoxy group, retinoic acid, isonicotinic acid, or phosphoric acid and mono- and dialkali and alkaline earth metal salts thereof; and G together with Q is an alkylidenedioxy or an alkylorthoalkanoate;

and the 1,2-dihydro analogs of the foregoing.

12. The method of treating an inflammatory condition in a warm-blooded animal which comprises administering to said animal a non-toxic, anti-inflammatory effective amount of a 6-acyloxy-3,20-dioxo-1,4,6-pregnatriene of formula I, claim 1, or of a 1,2-dihydro analog thereof;

together with a non-toxic, pharmaceutically acceptable carrier.

4,201,779

7[(2-AMINO-THIAZOL-4-yl)GLYOXYLAMIDO]-CEPHEM DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Dieter Bormann; Bernd Knabe, both of Kelkheim; Elmar Schrinner, and Manfred Worm, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

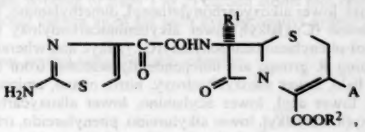
Filed Mar. 9, 1978, Ser. No. 884,813

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710902

Int. Cl.^{2} C07D *501/46, 501/22, 501/36;* **A61K** *31/545*

U.S. Cl. 424—246 **5 Claims**

1. A cephem compound of the formula



wherein

R^1 is hydrogen or low-molecular alkoxy;

R^2 is hydrogen, phthalide, a physiologically acceptable cation, low-molecular alkyl, or methyl substituted by trichloromethyl, by alkanoyloxy, by phenyl, by nitrophenyl, or by low-molecular alkoxyphenyl; and

A is hydrogen, alkoxy, halogen, or —CH$_2$Y wherein Y is hydrogen, alkanoyloxy, alkoxy, carbamoyloxy, or —SR^3 wherein R^3 is low-molecular alkanoyl, alkyl, a 5-membered ring having 1 to 4 nitrogen atoms, a 5 membered ring having 1 or 2 nitrogen atoms and an oxygen atom or a sulfur atom, a 6-membered ring having 1 or 2 nitrogen atoms, a 6-membered ring having 1 or 2 nitrogen atoms and a sulfur atom, or R^3 is such a 5-membered or 6-membered ring substituted by straight-chain or branched alkyl having 1 to 8 carbon atoms, by phenyl, or by phenyl which in turn is substituted by low-molecular alkyl, by low-molecular alkoxy, by nitro, or by halogen.

5. The method for treating a bacterial infection in a patient suffering therefrom which comprises administering to said patient an anti-bacterially effective amount of a compound as in claim 1.

4,201,780

MONO-5-SUBSTITUTED-3-CHLORO-4H-1,2,6-THIADIAZIN-4-ONE ANTIFUNGAL AGENTS

Clinton J. Peake; Wayne N. Harnish, both of Medina, and Bruce L. Davidson, Middleport, all of N.Y., assignors to FMC Corporation, Philadelphia, Pa.

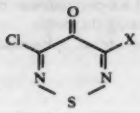
Continuation-in-part of Ser. No. 782,860, Mar. 30, 1977, Pat. No. 4,097,594. This application Apr. 10, 1978, Ser. No. 894,980

The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.

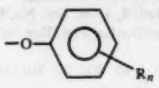
Int. Cl.^{2} C07D *285/16;* **A01N** *9/12*

U.S. Cl. 424—246 **3 Claims**

1. A compound of the formula



in which X is phenoxybenzyloxy, α-cyano-phenoxybenzyloxy, methylenedioxyphenoxy optionally substituted on the methylene with 1 or 2 lower alkyl groups, 2,3-dihydrobenzofuranyloxy optionally substituted at the 2 or 3 position of the furanyl ring with 1 or 2 lower alkyl groups, phenylseleno in which the phenyl ring is optionally substituted with 1 to 3 groups independently selected from lower alkyl and halogen, or substituted phenoxy having the formula



wherein n has a value of 1 to 3 inclusive, wherein at least one R group is halo(lower)alkyl, hydroxy(lower)alkyl, carboxyethenyl, lower alkoxycarbonylethenyl, dimethylamino, lower alkylamino (C_{1-2})alkyl, lower alkylaminocarbonyloxy (C_{1-2}) alkyl, or phenylaminocarbonyloxy(C_{1-2})alkyl, and wherein the remaining R groups are independently selected from lower alkyl, halo, lower alkoxy, hydroxy, nitro, cyano, amino, carboxyl, lower acyl, lower acylamino, lower alkoxycarbonyl, carboxy(lower)alkyl, lower alkylureido, phenylureido, trihalomethyl, cyano(lower)alkyl, phenyl(lower)alkoxycarbonyloxy, lower alkylaminocarbonyloxy, phenylaminocarbonyloxy, lower alkylthio, lower alkylsulfinyl and lower alkylsulfonyl.

3. A method for controlling fungal disease in plants which comprises applying to the locus where control is desired an effective fungistatic or fungicidal amount of the compound of claim 1.

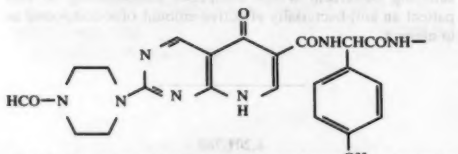
4,201,781

SUBSTITUTED 7[S-OXOPYRIDO[2,3-D]PYRIMIDINE CARBOXAMIDO ACETAMIDO]CEPHALOSPORINS

Masatsugu Tomita, Nagaokakyo; Yoshiyuki Takase, Amagasaki, and Toshio Komiya, Izumi-ohtsu, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 26, 1978, Ser. No. 973,169
Claims priority, application Japan, Dec. 28, 1977, 52-158398
Int. Cl.[2] A61K *31/545;* **C07D** *501/36*
U.S. Cl. 424—246 **10 Claims**

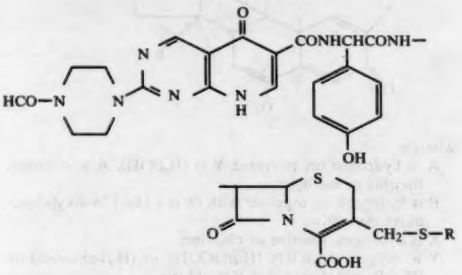
1. A member selected from the group consisting of cephalosporin compounds of the formula



wherein R is 1-carboxymethyl-1,2,3,4-tetrazol-5-yl or 5-carboxymethyl-1,3,4-thiadiazol-2-yl,
and non-toxic pharmaceutically acceptable salts thereof.

9. A method for treating bacterial infections which comprises parenterally administering an antibacterially effective dose of the compound defined in claim 1 to a warm-blooded animal.

10. An injectable composition which comprises an antibacterially effective amount of a member selected from the group consisting of a cephalosporin compound of the formula



wherein R is 1-carboxymethyl-1,2,3,4-tetrazol-5-yl or 5-carboxymethyl-1,3,4-thiadiazol-2-yl,
and a non-toxic pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

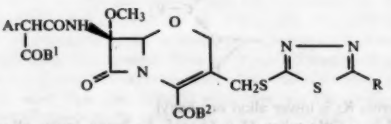
4,201,782

THIADIAZOLYL CEPHALOSPORIN ANALOGS

Masayuki Narisada, Ibaraki, and Wataru Nagata, Nishinomiya, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Aug. 24, 1978, Ser. No. 936,506
Claims priority, application Japan, Aug. 25, 1977, 52/102261
Int. Cl.[2] A61K *31/41;* **C07D** *413/02, 413/14*
U.S. Cl. 424—248.51 **62 Claims**

1. A compound of the formula:



wherein
Ar is phenyl, p-hydroxyphenyl, p-1–5C alkanoyloxyphenyl, p-benzyloxyphenyl, p-dimethylbenzyloxyphenyl, p-methoxybenzyloxyphenyl, p-nitrobenzyloxyphenyl, p-tetrahydropyranyloxyphenyl, p-3–8C trialkylsilyloxyphenyl, 3-thienyl or 2-thienyl;
R is hydrogen or 1–3C alkyl; and
COB^1 and COB^2 each is carboxy, protected carboxy or a carboxylate salt group.

51. A pharmaceutical or veterinary formulation which comprises a bactericidally effective amount of a compound as claimed in claim 1 together with a pharmaceutically acceptable or veterinarily acceptable, respectively, diluent, carrier or excipient.

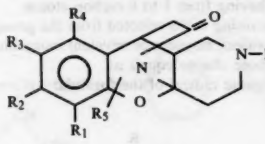
4,201,783

ANTIDEPRESSANT SUBSTITUTED HEXAHYDRO BENZOPYRANO [3,2-C] PYRIDINES

Philippe Briet; Jean-Jacques Berthelon, and Jean-Claude Depin, all of Lyons, France, assignors to Lipha Lyonnaise Industrielle Pharmaceutique, Lyons, France

Filed Jun. 23, 1978, Ser. No. 918,597
Claims priority, application France, Jun. 24, 1977, 77 19360; Jun. 1, 1978, 78 16376
Int. Cl.[2] A61K *31/445;* C07D *491/18*
U.S. Cl. 424—256 21 Claims

1. Substituted hexahydrobenzopyrano[3,2-c]pyridine, of the formula



where R is hydrogen or a saturated or unsaturated, linear or branched, lower alkyl, lower phenylalkyl, phenylcarbonyl, cinnamoyl, benzyloxycarbonyl, diloweralkylaminoloweralkyl, lower alkyl carbonyl, loweralkoxycarbonyl, haloethoxycarbonyl, cyclooloweralkyloxycarbonyl or phenyl; R_1 is hydrogen, halogen, or lower alkoxy; R_2 is hydrogen or halogen; R_3 is hydrogen, halogen, lower alkyl, lower alkoxy, nitro or amino, or forms naphthalene with R_4 and the benzene ring; R_4 is hydrogen, halogen, or forms naphthalene with R_3 and the benzene ring; R_5 is hydrogen, lower alkyl, or benzyl; or a salt thereof with a mineral or organic acid, acceptable for treating human beings.

21. A pharmaceutical composition useful as an antidepressant, comprising as the active principal, an amount sufficient for antidepressant activity of a hexahydrobenzopyrano [3,2-c]pyridine according to claim 1, and a pharmaceutically acceptable diluent or carrier.

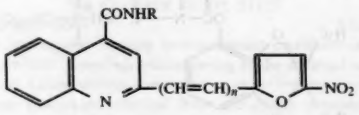
4,201,784

SUBSTITUTED 2-[2'-(5''-NITROFURYL-2'')VINYL-AND 4'-(5''-NITROFURYL-2''-1,3-BUTADIERYL]QUINOLINE-4-CARBOXYLIC ACID AMIDES AND SALTS THEREOF

Nina M. Sukhova; Marger J. Lidaka; Valentina A. Voronova; Aina A. Zidermane; Iya M. Kravchenko; Anda Z. Dauvarte; Ieva E. Preisa, and Dainuvite V. Meirena, all of Riga, U.S.S.R., assignors to Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR, Riga, U.S.S.R.

Filed Sep. 7, 1978, Ser. No. 940,798
Claims priority, application U.S.S.R., Sep. 9, 1977, 2524871
Int. Cl.[2] C07D *405/06*
U.S. Cl. 424—258 3 Claims

1. Substituted 2-[2'-(5''-nitrofuryl-2'')vinyl- and 4'-(5''-nitrofuryl-2'')-1,3-butadienyl]quinoline-4-carboxylic acid amides of the formula



wherein

R=—$CH_2CH_2CH_2OH$; —$CH(CH_3)(CH_2)_3N(C_2H_5)_2$

h=1, 2

and salts thereof.

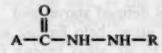
4,201,785

CYCLOPROPANYL-BEARING HYDRAZIDES

Faizulla G. Kathawala, Mountain Lakes, N.J., assignor to Sandoz Inc., Hanover, N.J.

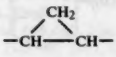
Continuation-in-part of Ser. No. 881,781, Feb. 27, 1978, abandoned. This application Apr. 4, 1979, Ser. No. 27,019
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1978, 2856856
Int. Cl.[2] A01N *9/22;* A61K *31/40;* C09F *5/00;* C07D *209/12*
U.S. Cl. 424—274 27 Claims

1. A compound of the formula:



wherein

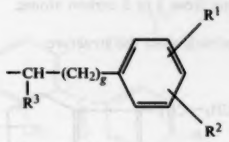
A is a saturated hydrocarbon chain interrupted by from 1 to 4 cyclopropanyl groups of the formula



said A being of from 7 to 23 carbon atoms plus one additional carbon atom for each cyclopropanyl group; and

R is:

(a) an aralkyl radical of the structure



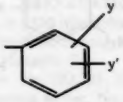
wherein g is 0 or 1;

wherein

R^1 is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms; or alkyl having from 1 to 3 carbon atoms;

R^2 is a hydrogen atom, alkyl having from 1 to 3 carbon atoms, alkoxy having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; and

R^3 is (i) a hydrogen atom, a phenyl radical of the structure (ii)



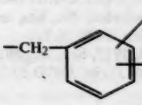
(ii)

wherein

y is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms; and

y' is a hydrogen atom, alkoxy having from 1 to 3 carbon atoms, alkyl having from 1 to 3 carbon atoms, or halo having an atomic weight of from about 19 to 36; or

a benzyl radical of the formula (iii)

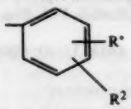


(iii)

wherein y and y' are as defined above; or (iv) alkyl having from 1 to 8 carbon atoms;

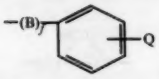
or R is:

(b) a phenyl radical of the structure



wherein R^2 is as defined above, and

R^* is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkyl having from 1 to 3 carbon atoms; alkoxy having from 1 to 3 carbon atoms; or a radical of the structure R/:



in which

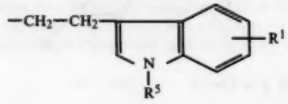
B is $-CH_2-$ or $-O-$;

f is 0 or 1; and

Q is a hydrogen atom, halo having an atomic weight of from about 19 to 80, alkoxy having from 1 to 3 carbon atoms, or alkyl having from 1 to 3 carbon atoms;

or R is:

(c) an indolyl radical of the structure:



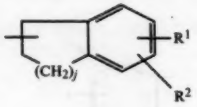
wherein

R^1 is as defined above, and

R^5 is a hydrogen atom, alkyl having from 1 to 8 carbon atoms or benzyl (unsubstituted);

or R is

(d) a benzocycloalkyl nucleus of the structure:



wherein

R^1 and R^2 are as defined above; and

j is a whole integer of from 1 to 4.

19. A method of reducing the cholesterol ester content of an arterial wall, in a mammal in need of such treatment, comprising administering a cholesterol ester-reducing amount of a compound of claim **1** to said mammal.

4,201,786

WATER SOLUBLE PESTICIDAL QUATERNARY AMMONIUM SALT COMPOUNDS

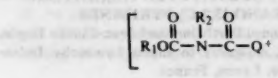
Barbara W. Kaplan, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 27, 1977, Ser. No. 801,333

Int. Cl.[2] **A61K** *31/36, 31/34;* **C07D** *317/44, 307/78*

U.S. Cl. 424—282 **48 Claims**

1. A compound of the formula:



wherein:

n is 1, 2 or 3;

R_1 is benzofuranyl, benzodioxanyl benzothienyl, dihydrobenzothienyl, benzodioxolanyl or dihydrobenzofuranyl all of which may be either unsubstituted or substituted with one or more alkyl groups having from 1 to 8 carbon atoms;

R_2 is alkyl having from 1 to 8 carbon atoms;

X is a quaternising anion selected from the group consisting of mono-valent, divalent or trivalent inorganic or organic anions whose charge equals n;

Q^+ is an organic radical of the formula:

wherein:

A is a divalent aliphatic hydrocarbon radical having from 1 to 25 carbon atoms;

R, R' and R" are

(a) individually, either substituted or unsubstituted alkyl, alkoxyalkyl, alkenyl or alkynyl; or

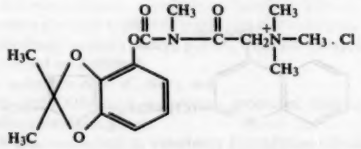
(b) when R and R' are the same or different and are methyl or ethyl, R" is either a substituted or unsubstituted phenyl, naphthyl, cycloalkyl, cycloalkenyl or a 5 or 6 membered heterocyclic ring structure which includes carbon and one or two heteroatoms of oxygen or nitrogen or a combination of oxygen and nitrogen; or

(c) when R is alkyl of from 1 to 4 carbon atoms, R' and R" together may form either a substituted or unsubstituted alkenylene or alkylene chain having from 2 to 20 carbon atoms which completes a 3, 4, 5, 6, 7, 8 or 9 membered monocyclic ring structure; said chain may include one or two heteroatoms of oxygen or nitrogen or a combination of oxygen and nitrogen; or

(d) R, R' and R" together may form a substituted or an unsubstituted alkylene or alkenylene chain having from 2 to 20 carbon atoms which completes a 3, 4, 5, 6, 7, 8, or 9 membered monocyclic or bicyclic ring structure, and said chain may include one or two heteroatoms of oxygen or nitrogen or a combination of oxygen and nitrogen;

wherein the permissible substituents that may be substituted on R, R' and R" are one or more alkoxy, alkyl alkanoyloxy, alkoxycarbonyl, cyano, halo, nitro, dialkylamino or alkanoyl groups; with the proviso that the sum of aliphatic carbon atoms included in R, R' and R" may not be more than thirty-five.

14. A compound of the formula:



29. A method of controlling insects and mites which comprises subjecting them to an insecticidally or miticidally effective amount of a compound according to claim **1**.

4,201,787

ISOVALERIC ACID ESTER DERIVATIVES, AND INSECTICIDES CONTAINING SAID DERIVATIVES

Yoshio Katsuda, Nishinomiya, and Yoshihiro Minamite, Osaka, both of Japan, assignors to Dainippon Jochugiku Kabushiki Kaisha, Osaka, Japan

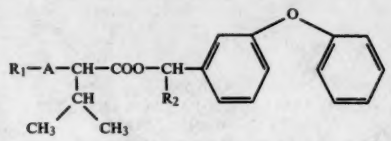
Filed Nov. 30, 1977, Ser. No. 856,136

Claims priority, application Japan, Dec. 1, 1976, 51-144992; Dec. 11, 1976, 51-149079; Feb. 26, 1977, 52-20733; Mar. 25, 1977, 52-33479; Apr. 2, 1977, 52-37828

Int. Cl.[2] A01N *9/20, 9/24;* C07C *69/67, 121/75*

U.S. Cl. 424—304 17 Claims

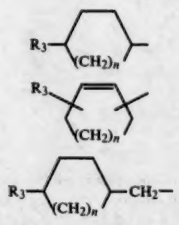
1. Isovaleric acid ester derivatives and optical and geometrical isomers thereof expressed by the general formula:



wherein

A represents O, NH, or CH_2,

R_1 represents, if A is O or NH, an alkyl, an alkenyl, a haloalkyl and a haloalkenyl radical with 2–6 carbon atoms, and a radical selected from those of the general formula:



in which n is an integer of 1–3, and R_3 represents hydrogen, a methyl group of a chlorine atom, and

if A is CH_2, R_1 represents a haloalkyl or haloalkenyl radical with 1–5 carbon atoms, and R_2 represents hydrogen or a cyano group.

15. An insecticide composition comprising a carrier and as its essential ingredient an insecticidally effective amount of a compound as set forth in claim 1.

4,201,788

PROCESS FOR ALLEVIATING PROLIFERATIVE SKIN DISEASES

John J. Voorhees, Ann Arbor, Mich., and Diane H. Russell, Tucson, Ariz., assignors to University Patents, Inc., Stamford, Conn. and The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 734,152, Oct. 20, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,878

Int. Cl.[2] A61K *31/275, 31/15*

U.S. Cl. 424—304 7 Claims

1. A process for treating non-malignant proliferative skin diseases which comprises administering to the afflicted human or animal, a composition containing as an active component at least one compound selected from the group consisting of methyl glyoxal bis-(guanyl hydrazone) and 1,1'-methylethanediylidinedinitrilo)-bis-(3-aminoguanidine), said compound being in association with a pharmaceutical carrier wherein the concentration of said active component is effective to alleviate a proliferative skin disease.

4,201,789

CYCLOPROPANECARBOXYLIC ACID NAPHTHYLMETHYL ESTER

Milos Suchy, Pfaffhausen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 13, 1978, Ser. No. 968,893

Claims priority, application Luxembourg, Dec. 21, 1977, 78736

Int. Cl.[2] C07C *69/74;* A01N *9/24*

U.S. Cl. 424—305 5 Claims

1. Cyclopropanecarboxylic acid 2-naphthylmethyl ester.

2. An insecticidal and acaricidal composition which comprises inert carrier material and, as the active ingredient, an amount of cyclopropanecarboxylic acid 2-naphthylmethyl ester which is effective as an insecticide and acaricide.

4,201,790

BENZOPHENONE DERIVATIVES

Berkeley Basil, Highwood, Nr. Chelmsford, and Kenneth R. H. Wooldridge, Brentwood, both of England, assignors to May & Baker Limited, Essex, England

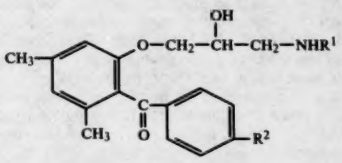
Continuation of Ser. No. 695,445, Jun. 14, 1976, abandoned. This application Dec. 14, 1977, Ser. No. 860,303

Claims priority, application United Kingdom, Jun. 20, 1975, 26407/75

Int. Cl.[2] A01N *9/20, 9/24;* C07C *93/06*

U.S. Cl. 424—330 10 Claims

1. A benzophenone derivative of the formula:



wherein R^1 is isopropyl, t-butyl, or 2-phenylethyl, and R^2 is hydrogen, methyl, or chlorine, and non-toxic acid addition salts thereof.

8. A method for the treatment of migraine which comprises administering orally to a person with migraine between 0.1 and 10 mg./kg. body weight of a benzophenone derivative as claimed in claim 1 or a non-toxic salt thereof.

4,201,791

PESTICIDE POWDERS, THEIR USE AND PREPARATION

Frank B. Livaudais, Jr., 103 Magnolia Dr., Metairie, La. 70005, and Joseph W. Spiselman, Brooklyn, N.Y., assignors to Frank B. Livaudais, Jr, Metairie, La.

Continuation of Ser. No. 722,309, Sep. 10, 1976, abandoned, which is a continuation of Ser. No. 607,347, Aug. 25, 1975, abandoned, which is a division of Ser. No. 376,467, Jul. 5, 1973, abandoned. This application Sep. 29, 1977, Ser. No. 837,526

Int. Cl.[2] A01N *9/00*

U.S. Cl. 424—358 8 Claims

1. A method for producing a pesticidal composition of matter which comprises:

(a) passing a first stream comprising aluminum sulfate in aqueous solution, a metallic chloride or silicon tetrachloride to a first conduit;

(b) passing a second stream comprising ammonia, an amine, or an ammonium compound in water in substantially stoichiometric amount to said first conduit;

(c) admixing a compound or compounds selected from the group consisting of an insecticide, a larvicide and a fungicide with one of said first or second streams;

(d) passing a third stream comprising air through said conduit to contact said first stream and said second stream;

(e) passing the resultant mixture to a reaction chamber maintained near ambient temperature;
(f) passing the resultant reaction mixture to a separation chamber; and
(g) removing said pesticidal composition from said separation chamber.

4,201,792
PRODUCTION OF SHERRY WINE
Richard Fricker, Derby, and Robin W. Goswell, Bristol, both of England, assignors to A.G. (Patents) Limited, London, England
Filed Oct. 27, 1977, Ser. No. 845,848
Claims priority, application United Kingdom, Oct. 28, 1976, 44904/76
Int. Cl.[2] C12G *1/00*
U.S. Cl. 426—15 8 Claims

1. A process for maturing sherry wine comprising
(a) establishing a solera scale and one or more progressively younger criadera scales, each scale comprising an individual container filled to a predetermined level with process wine, the containers being separated by partitions having weirs therein set at progressively lower levels from the youngest to the oldest scale to enable forward gravitational flow of process wine between the scales from the youngest to the oldest over the weirs, with each weir being baffled against access thereto by the flor in each scale on opposite sides of the respective weir;
(b) periodically transferring a quantity of process wine from a criadera scale to an older scale while directly and simultaneously transferring to each successive older criadera scale, if there be one, but at least to the solera scale, a similar quantity of process wine from the next youngest scale by overflow over the weirs, by causing the wine in each scale involved in the transfer to flow over the weir from a liquid level beneath the flor in the upstream scale and to flow into the downstream scale beneath the flor in the latter.

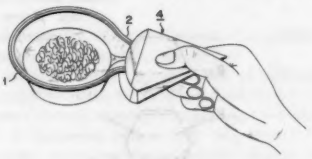
4,201,793
OIL COOKED FOODS CONTAINING METAL PROTEINATES
Harvey H. Ashmead, 719 E. Center St., Kaysville, Utah 84037
Filed Nov. 19, 1976, Ser. No. 743,456
Int. Cl.[2] A23L *3/34*
U.S. Cl. 426—92 18 Claims

6. A method of inhibiting rancidity in a cooking oil which comprises adding an inhibiting amount of an essential metal in the form of a metal proteinate to the cooking oil wherein said metal proteinate is the chelate of a metal with at least two ligands which ligands are proteinate hydrolysates consisting of polypeptides, peptides, and naturally occurring amino acids.

4,201,794
POWDER COMPOSITION FOR SOFT DRINK
Kenji Sumitani, Ikuno, Japan, assignor to Kawakami Kagaku Kogyo Company Ltd., Osaka, Japan
Filed Sep. 6, 1978, Ser. No. 940,142
Claims priority, application Japan, Jul. 21, 1978, 53-89703
Int. Cl.[2] A23L *2/00*
U.S. Cl. 426—96 2 Claims

1. An edible powder composition for making soft drinks which comprises a powdery water-soluble color chosen from the group (I) of anthraquinonoids; PH regulators consisting of one or more powdery organic acids chosen from the group (II) and one or more powdery alkaline salt(s) chosen from the group (III), wherein either of the PH regulators, but not the anthraquinonoid, is coated with one or more water-soluble coating materials of group (IV) to change suddenly the shade of soft drink through a sudden change of PH value below 7 at a predetermined time after the powder composition is placed in water:
Group (I);
carminic acid, laccaic acid,
Group (II);
citric acid, dl-malic acid,
Group (III);
sodium trimetaphosphorate, sodium bicarbonate, and
Group (IV);
saccharides, dextrin, xanthan gum, pullulan, carboxymethyl cellulose, sodium alginate.

4,201,795
HANDY CONTAINER-PAN FOR INSTANTLY FRIZZLABLE DRY FOODS
Kenji Yamanaka, Komae, Japan, assignor to Toyo Suisan Kaisha, Ltd., Tokyo, Japan
Filed Jun. 28, 1978, Ser. No. 919,807
Int. Cl.[2] B65D *81/34*
U.S. Cl. 426—110 5 Claims

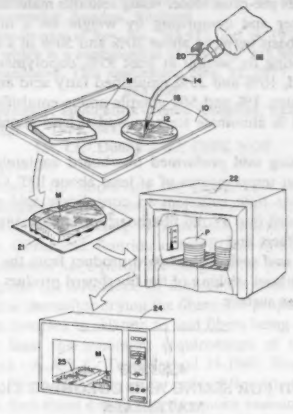


1. In a handy container-pan assembly including therein an instantly frizzlable dry food, comprising a pan made of aluminum foil and having a scoop-type grip made of aluminum foil and integrally formed with an upper part of the pan, the pan having a wallstep formed at least on the whole inner and upper periphery of the pan; a cardboard lid mountable on said wallstep for closing the pan; and a shrink-packaging polymer film surrounding said pan and lid for attaching said lid to the pan;
The improvement wherein said lid has a pair of crossed lines press-marked thereon for inflection of the lid on said crossed lines to form a doubly inflected lid which is slideably mounted over the scoop-type grip of the pan for protecting the user when the pan, and consequently the grip, is heated during heating of the dry food in the pan.

4,201,796
METHOD OF COOKING MEAT
James L. Harkins, Box 725, 3 Wellington Ave., Ross, Calif. 94967
Filed Feb. 15, 1979, Ser. No. 12,353
Int. Cl.[2] A23L *1/01*
U.S. Cl. 426—238 3 Claims

1. The method of cooking meat portions comprising the steps of:
searing just the surface of the meat briefly with a well-de-

fined pencil flame of high velocity burning gas while leaving the center uncooked;
removing the heat; and



thereafter cooking the meat to a greater depth in a microwave oven.

4,201,797

PROCESS FOR APPLYING A LIGHT-ABSORBING, ELECTRON PERMEABLE LAYER WITHIN AN IMAGE INTENSIFIER TUBE

Johannes J. Houtkamp, Delft, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands

Filed Oct. 11, 1977, Ser. No. 841,067

Claims priority, application Netherlands, Oct. 20, 1976, 7611593

Int. Cl.[2] H01J *31/26, 9/22*

U.S. Cl. 427—66 **4 Claims**

1. A process for forming an anode for an image intensifier tube of the proximity-focus type which employs the anode closely spaced with a photocathode which releases photoelectrons, the process comprising the steps of

applying a layer of luminescent material on a light-transparent substrate,

applying a layer of aluminum on the luminescent material, and

applying a low atomic weight element selected from the group consisting of boron and silicon to the layer of aluminum by evaporation under conditions of a high vacuum to form a layer thereon wherein the applying of boron or silicon is continued until the thickness of the layer theref is approximately one-fourth the average wavelength of light which impinges upon a photocathode of the image intensifier tube.

4,201,798

METHOD OF APPLYING AN ANTIREFLECTIVE COATING TO A SOLAR CELL

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Division of Ser. No. 740,670, Nov. 10, 1976. This application Sep. 30, 1977, Ser. No. 838,093

Int. Cl.[2] B05D *5/12*

U.S. Cl. 427—74 **8 Claims**

1. A method of applying an antireflective coating to a surface of a solar energy cell, said surface being adapted to absorb light impinging thereon, comprising forming a nonstoichiometric mix of tantalum and oxygen in solid form in such proportion that, on subsequent deposition the increasing thickness of the layer of suboxide deposited will be visually apparent by changes in color from gold to purple or blue, and depositing a layer of a suboxide of tantalum of desired thickness on the light-absorbing surface of the cell.

4,201,799

REFINISH PAINTING APPARATUS

Charles E. Stephens, 10037 Dixie Hwy., Anchorville, Mich. 48004

Continuation of Ser. No. 754,229, Dec. 27, 1976, abandoned. This application Oct. 26, 1978, Ser. No. 954,907

The portion of the term of this patent subsequent to Dec. 30, 1992, has been disclaimed.

Int. Cl.[2] C09J *7/04*

U.S. Cl. 427—142 **1 Claim**

1. A method of refinish painting a panel having a demarcation line between angularly related panel portions, one of which is to be refinish painted, comprising:

creasing a strip of tape completely along the length thereof, the tape comprised of a securing means to attach the tape to the panel surface yet to allow for later removal and a flexible elongated strip to provide angularly related longitudinally extending tape portions with the crease maintaining the portions in their angular relationship,

applying said tape to the panel with the crease line disposed at the demarcation line of the panel and with one strip portion adhered by the securing means to one side of the line on the panel portion not to be refinish painted and the other tape portion extending over and angularly upwardly away from the panel portion to be refinish painted, to form an included angle within the range of approximately 15° to approximately 45°, and

spraying a layer of paint on the panel to be refinish painted and beneath the upwardly angled tape portion.

4,201,800

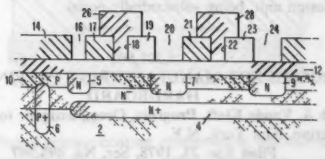
HARDENED PHOTORESIST MASTER IMAGE MASK PROCESS

George E. Alcorn, Reston, Va.; David L. Bergeron, Winooski, Vt., and Geoffrey B. Stephens, Cary, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 28, 1978, Ser. No. 900,844

Int. Cl.[2] C03C *15/00, 27/06*

U.S. Cl. 430—5 **1 Claim**



1. A process for forming an improved mask on a semiconductor substrate, comprising the steps of:

depositing a first resist layer on the surface of said substrate;

forming a plurality of windows in said first resist layer;
hardening said first resist layer by immersing it in a solution of sodium, 2 diazo, 1 oxynaphthalene, 4 sulfonate;
depositing a second resist layer over the surface and windows in said first resist layer;
selectively forming a subplurality of windows in said second resist layer over selected ones of said plurality of windows in said first resist layer;
whereby said second resist layer selectively blocks a portion of said plurality of windows in said first layer.

4,201,801

METHOD OF FORMING A DECORATIVE RELIEF PATTERN

Kiyoshi Hori, Suita, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 802,197, May 31, 1977, abandoned, which is a continuation of Ser. No. 686,218, May 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 472,460, May 22, 1974, abandoned. This application Jun. 27, 1978, Ser. No. 919,694

Int. Cl.[2] B05D *5/00*

U.S. Cl. 427—274 **16 Claims**

1. In a method of forming a decorative relief pattern comprising providing a layer of highly viscous material on the surface of an article or substrate to be patterned, and imparting a decorative relief pattern to said layer by rolling the surface of a roller over said layer a plurality of times necessary to cover the desired area of said surface of said article or substrate to be patterned, the improvement comprising performing said step of rolling while preventing the formation on said layer of directional traces indicative of the direction of rolling movement of said roller due to the formation of boundary lines in said layer at the ends of said roller, said improvement of preventing said directional traces comprising performing said rolling with the use of a roller consisting essentially of:

a roller surface having thereon a roller design arrangement consisting essentially of a single design unit occupying the entire said roller surface, said single design unit being formed of a plurality of design elements arranged around a common center of said single design unit, each said design element comprising a projection extending outwardly from said roller surface, each said projection extending in an elongated curved manner and having a flat outer top surface, and the spacings between any adjacent two of said design elements, taken along a straight line extending through said common center of said single design unit, being substantially equal.

4,201,802

PROCESS FOR MANUFACTURING PREFINISHED HARDBOARD

Joseph A. Vande Kieft, Progress, Oreg., assignor to SCM Corporation, New York, N.Y.

Filed Apr. 21, 1978, Ser. No. 898,967

Int. Cl.[2] B32B *31/00*

U.S. Cl. 427—370 **1 Claim**

1. In a process for molding prefinished fiberboard products under heat and pressure comprising:

providing a plurality of layers of fiberboard stock material in the form of a non-consolidated preformed fiberboard product;

coating the surface of said preformed fiberboard with an aqueous pre-press sealer being resinous material dispersed in water and comprising by weight on a film-forming solids basis between about 30% and 50% of a copolymer containing by weight at least 95% copolymerized vinyl alcohol, 10% and 25% emulsified fatty acid and/or fatty acid ester, 1% and 5% volatile amine emulsifier and 5% and 10 % aluminate stearate, and at least about 15% water;

hot pressing said preformed fiberboard containing surface sealer at temperatures of at least about 100° C. within a press for time sufficient to consolidate said preformed fiberboard into a solid fiberboard product having a sealed top surface; and

releasing said sealed fiberboard product from the press surface without sticking of the fiberboard product surface to the press surface.

4,201,803

METHOD FOR SIZING AND COLORING TEXTILE MATERIALS

George R. DePaolo, Readington Township, Hunterdon County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 13, 1978, Ser. No. 877,138

Int. Cl.[2] B05D *3/02*

U.S. Cl. 427—381 **19 Claims**

1. A method for durably sizing a textile substrate material by applying thereto an aqueous dispersion or emulsion of a chain-extended polyurethane having pendant carboxyl groups, a tertiary amine, a thermosetting aminoplast resin, a catalyst for curing said aminoplast resin, and an anionic or nonionic surfactant, drying, and curing the treated material at an elevated temperature.

4,201,804

GASKET IMPREGNATED WITH A POLYMERIZABLE LIQUID AND METHOD FOR ITS MANUFACTURE

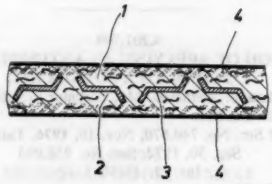
Friedhelm Stecher, Burscheid; Josef Fazekas, Wermelskirchen; Paul Jöhren, Dortmund-Hörde, and Martin Morsbach, Hilgen, all of Fed. Rep. of Germany, assignors to Goetzewerke Friedrich Goetze AG, Burscheid, Fed. Rep. of Germany

Division of Ser. No. 438,357, Jan. 31, 1974, abandoned. This application Jun. 26, 1978, Ser. No. 918,820

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1973, 2304558

Int. Cl.[2] B05D *3/02, 1/18*

U.S. Cl. 427—393.6 **8 Claims**



1. A method of forming a gasket comprising impregnating a fibrous and/or porous material with a liquid saturating agent consisting essentially of an organic, synthetic and completely polymerizable liquid that does not contain agents which will evaporate during polymerization of the liquid, and polymerizing the liquid.

4,201,805

ZIRCONIUM FLAME-RESIST, LOW SMOKE EMISSION TREATMENT

Ladislav Benisek, Ilkley, England, assignor to International Wool Secretariat, London, England

Continuation-in-part of Ser. No. 703,912, Jul. 9, 1976, Pat. No. 4,160,051, which is a continuation of Ser. No. 235,866, Mar. 17, 1972, abandoned. This application Nov. 21, 1977, Ser. No. 853,460

Claims priority, application United Kingdom, Mar. 18, 1971, 7214/71; Apr. 1, 1971, 8412/71

Int. Cl.[2] D06M *3/02*; C09K *3/28*

U.S. Cl. 427—389 6 Claims

1. A process for improving the flame-resist properties of natural polyamide fibers comprising applying to said fibers an aqueous solution consisting of water, an anionic complex of zirconium, Citric acid, fluoride and sufficient formic acid such that said solution has a pH in the range of 0.5 to 4.0, whereby to impregnate the substance of said fibers with said anionic complex and thereafter drying the fibers, the proportion of said zirconium complex in relation to said fibers being sufficient to satisfy at least the minimum requirements of the Vertical Flame Test - A.A.T.C. Test Method 34-1969, Fire Resistance of Textile Fabrics, and the molar ratio of fluoride to zirconium being less than about 4 such that the smoke emission ($Ds_{t\text{-}4\ min}$) of said fibers, after drying, is not more than about 100.

4,201,806

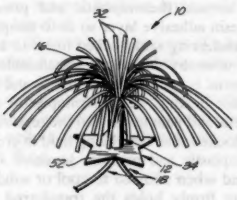
SPRAY DECORATION

Bernard M. Cole, 7 Park Dr. East, Old Westbury, N.Y. 11568

Filed Jan. 16, 1978, Ser. No. 869,715

Int. Cl.[2] D04D *7/10*

U.S. Cl. 428—4 12 Claims



1. A spray-like decorative ornament for use in gift-wrapping a package comprising:

A. a rigidifying core having a substantially cylindrical sidewall and top and bottom edges;

B. a strip of metal foil wound about said core, a section of said strip being of greater height than said core, the top portion of said strip being substantially smoothly tapered from a minimum height at one end thereof to a maximum height at the other end and being vertically slit to define a plurality of fingers, the bottom portion of said strip not being vertically slit and the bottom edge thereof being continuous and in substantially a single horizontal plane, said core and strip bottom edges forming an exposed planar abutment surface adapted to abut said package, said core top edge being disposed above the bottoms of said fingers; and

C. an elasticized cord passing transversely through said core between said core top edge and the bottoms of said fingers and extending out beyond said ornament.

4,201,807

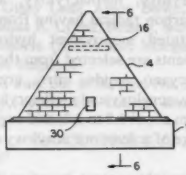
ACCESSORY ITEM

Anthony A. Rocca, 612 N. Michigan Ave., Chicago, Ill. 60611

Filed Jul. 11, 1978, Ser. No. 923,590

Int. Cl.[2] A45C *1/12*

U.S. Cl. 428—35 1 Claim



1. An accessory item comprising: a base; a hollow pyramidal shaped superstructure removably mounted on said base having an elongated area of reduced cross-sectional thickness formed in one interior planar wall surface of said pyramidal superstructure and defining an elongated recess in said interior planar wall surface, whereby said area of reduced cross-sectional thickness can be easily removed to form an elongated slot-like opening in one wall of said pyramidal superstructure; at least two tabs extending downwardly from the bottom edge of said pyramidal superstructure with at least one of said tabs being formed on and extending from the bottom edge of each of two opposed planar walls of said pyramidal superstructure with said tabs lying in the planes of said planar walls so as to be disposed at an angle with the vertical plane; and at least two slots disposed in said base shaped to receive said tabs, said slots being positioned at an angle with said vertical plane slightly greater than the angle of said tabs, whereby said tabs are urged against the interior of said slots in said base when inserted to provide a secure connection between said superstructure and said base, and whereby said bottom edge of at least one of said two opposed planar walls of said pyramidal superstructure is free to be pressed inwardly relative to the plane thereof so as relieve the pressure exerted by said tab on said inwardly pressed wall against said interior surface of one of said slots so as to permit removal of said pyramidal superstructure from said base.

4,201,808

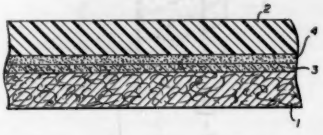
RADIATION CURABLE SILICONE RELEASE COMPOSITIONS

Maryann Cully, Croton-on-Hudson; Arthur N. Pines, Katonah; Richard B. Metzler, Ossining, and Gunther W. Babian, Peekskill, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,889

Int. Cl.[2] A61F *13/02*; C08F *30/08*

U.S. Cl. 428—40 31 Claims



1. A silicone release coating composition, curable by exposure to ionizing radiation or actinic nonionizing radiation, comprising:

(A) from 10 to 90 weight percent, based on the total weight of the composition, of an organopolysiloxane of the formula

$$\left[R_nSiO_{\frac{4-n}{2}}\right]_m$$

wherein m has an average value greater than about 25; each R, individually, is acryloxy, methacryloxy, an unsubstituted monovalent hydrocarbon radical having from 1 to 20 carbon atoms or a substituted monovalent hydrocarbon radical wherein the substituents are selected from the class consisting of chloro, fluoro, cyano, amido, nitro, ureido, isocyanato, carbalkoxy, hydroxy, acryloxy and methacryloxy; and n has an average value of from about 1.8 to 2.2; said organopolysiloxane containing an average of at least one acryloxy or methacryloxy group;

(B) from 90 to 10 weight percent, based on the weight of the composition of a low molecular weight acrylyl crosslinker chosen from the group consisting of

(i) di-, tri-, and tetrafunctional acrylate or methacrylate esters of organic polyfunctional alcohols, having a molecular weight up to about 1,200, and (ii) low molecular weight siloxane polyacrylates having from 1 to about 25 siloxy groups and from 2 to about 6 organic groups which contain an acryloxy or methacryloxy radical, each of said organic groups being bonded to a silicon atom through a carbon-silicon or carbon-oxygen-silicon bond; and

(C) from 0 to about 10 weight percent, based on the weight of the composition, of a photosensitizer.

30. A laminate comprising:

(a) a first substrate;

(b) a second substrate;

(c) a release layer consisting of a composition as claimed in claim 1 which has been cured by exposure to radiation; and

(d) a layer consisting of a pressure sensitive adhesive composition;

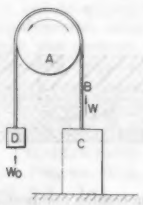
said release layer being interposed between said first substrate and layer of pressure sensitive adhesive and being preferentially adherent to said first substrate; and said pressure sensitive adhesive layer being interposed between said release layer and second substrate and being preferentially adherent to said second substrate.

4,201,809

MAGNETIC RECORDING MEDIUM

Hiroshi Ogawa, and Yasuo Tamai, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 18, 1978, Ser. No. 925,694
Claims priority, application Japan, Jul. 20, 1977, 52-86132
Int. Cl.[2] H01F *10/02*
U.S. Cl. 428—65 **14 Claims**



1. A magnetic recording medium having on a non-magnetic support a magnetic layer comprising a ferromagnetic powder dispersed in a binder, in which the magnetic layer contains a compound represented by the following general formula (I),

$$R\left(O-\overset{\overset{O}{\|}}{C}-R'\right)_n \quad (I)$$

wherein R represents a residual radical of trimethylolethane, trimethylolpropane or pentaerythritol, R′ represents a residual radical of a fatty acid having at least 5 carbon atoms and n represents an integer of 2 to 4 said compound (I) being present in a proportion of 0.1 to 5 parts by weight to 100 parts by weight of ferromagnetic powder.

4,201,810

TRANSFERABLE FLOCKED FIBER DESIGN MATERIAL

Shigehiko Higashiguchi, 4-2 Honjo 3-chome, Sumida-Ku Tokyo, Japan

Filed Feb. 10, 1978, Ser. No. 876,573
Claims priority, application Japan, Aug. 24, 1977, 52-101417
Int. Cl.[2] B44C *3/02*
U.S. Cl. 428—90 **12 Claims**

1. A transferable flocked fiber design material for transfer to an article to be decorated with said design material in a desired design comprising:

a release support sheet;

a number of fibers releasably flocked at one end to one surface of said support sheet in erect and closely adjacent relationship to each other through a water soluble and water dispersible adhesive; and

a thermoplastic and pressure sensitive synthetic resin adhesive layer applied to the ends of said fibers opposite to said support sheet;

characterized in that a thermoplastic resin adhesive powder is applied to said thermoplastic and pressure sensitive synthetic resin adhesive layer so as to cooperate with the latter in transferring said flocked fibers to an article to be decorated, whereby when said transferable flocked fiber design material is applied to the article and pressed thereagainst under heating, said thermoplastic resin adhesive powder melts and penetrates into the texture of the article while the flocked fibers are being held in erect position by said thermoplastic and pressure sensitive synthetic resin adhesive and when allowed to cool or solidify, the adhesive mixture firmly holds the transferred fibers on the article; and at least said thermoplastic and pressure sensitive synthetic resin adhesive layer is in the form of a desired design.

4,201,811

RUG AND METHOD OF MAKING THE SAME

Joseph J. Montell, Laguna Beach, Calif., assignor to Rug Crafters, Santa Ana, Calif.

Filed Jun. 27, 1977, Ser. No. 810,038
Int. Cl.[2] D03D *27/00*
U.S. Cl. 428—92 **1 Claim**

1. A rug comprising:

a rug backing having a forward face and a back face, said rug backing having indicia thereon;

a plurality of bundles of strands;

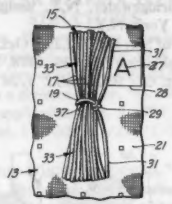
a plurality of elongated flexible tying elements, each of said tying elements being attached to said rug backing, at least some of said tying elements being attached to said rug backing at locations adjacent said indicia;

each of said tying elements being wrapped at least part way

around a central region of one of said bundles and tied into a knot to attach the associated bundles to said forward face of said rug backing whereby each of the bundles forms two clumps of pile of the rug;

the end portions of at least some of said tying elements extending beyond the knot formed in such tying element to form additional strands of the associated bundle;

said additional strands terminating at about the ends of the other strands of the associated bundle;



an adhesive joining at least some of the tying elements and the associated bundles to prevent the strands of such bundles from being pulled out of the rug;

at least some of said knots engaging said forward face of said rug backing whereby such knots are protected and not readily visible when the rug is in use; and

at least some of said tying elements being wrapped only one time around a central region of the associated bundles.

4,201,812

BITUMINOUS CARPET BACKING

Thomas C. Blanken, and Joannes C. A. Schellekens, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 18, 1979, Ser. No. 49,380

Claims priority, application Netherlands, Jul. 4, 1978, 7807224

Int. Cl.[2] **C08H** *13/08;* **C08F** *43/00*

U.S. Cl. 428—95 **11 Claims**

1. A fibrous floor covering comprising a layer of a fibrous fabric having an integral backing layer, said backing layer comprising the blend of:

(a) from about 50 to about 95 percent of a bituminous component having a penetration of below about 30 (0.1 mm) at 25° C., and

(b) from about 5 to about 50% by weight of a block copolymer having at least two monoalkenyl arene polymer end blocks A and at least one elastomeric conjugated diene mid block B.

4,201,813

CELLULAR LINEAR FILAMENTS WITH TRANSVERSE PARTITIONS

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J. 07042

Continuation-in-part of Ser. No. 839,082, Oct. 3, 1977, abandoned, which is a continuation of Ser. No. 649,162, Jan. 14, 1976, abandoned, which is a division of Ser. No. 262,837, Jun. 14, 1972, abandoned. This application Sep. 13, 1978, Ser. No. 942,097

Int. Cl.[2] **D03D** *27/00;* **D02G** *3/00*

U.S. Cl. 428—97 **15 Claims**

1. Cellular filament comprising a substantially continuous integral plastic hollow member having internal transverse partitions which divide the said member into individual cells at intervals, at least some of the said individual cells being closed with respect to the adjacent cells and at least some of the said cells being open to the outside of the said filament.

4,201,814

MESH STRUCTURES

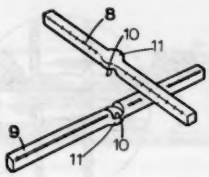
John F. Gilbert, Gipsy Lane, Aston Down, Stroud, Gloucestershire, and Nicholas L. Lyons, Bristol, both of England, assignors to John Francis Gilbert and Margaret Gilbert, both of Gloucestershire, England

Filed Jun. 30, 1978, Ser. No. 921,044

Claims priority, application United Kingdom, Jul. 2, 1977, 27799/77

Int. Cl.[2] **B32B** *5/12*

U.S. Cl. 428—107 **10 Claims**



1. Mesh structure comprising a plurality of longitudinal members, a plurality of transverse members, and joins interconnecting said members at the junctures where said members cross each other at least some of said transverse members comprising single elongate components of synthetic plastics material of which the molecular structure has been orientated in a direction corresponding to the longitudinal axis of said member, each of said elongate components being provided at each of said joins with at lease one local pre-formed permanent deformation, and masses of plastic material moulded around the junctures of said members to form said joins.

4,201,815

SHEAR TRANSFER ELEMENT

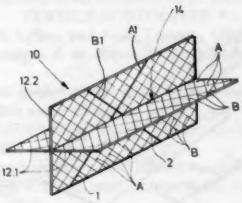
Emil Weiland, Hohenbrunn; Rudolf Schindler, Ottobrunn, and Klaus Brunsch, Weidach, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,223

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757965

Int. Cl.[2] **B32B** *5/12*

U.S. Cl. 428—113 **7 Claims**



1. Shear transfer element comprising at least two intersecting shear resistant planar webs each arranged in a plane spaced angularly relative to the other and said webs joined to one another along an intersecting junction line extending across each of said webs, each said web comprising a compound fiber material with the fibers arranged in a crossing arrangement and with the fibers obliquely inclined to the intersecting junction line, wherein the improvement comprises that each of said

webs extends laterally outwardly from opposite sides of the intersection junction line having a first part on one side of the intersecting junction line and a second part on the opposite side thereof, and said fibers in each said web extend continuously through the intersecting junction line from said first part to said second part thereof.

4,201,816

BASIS FOR A TABLETOP FOR AN EXTENSION TABLE

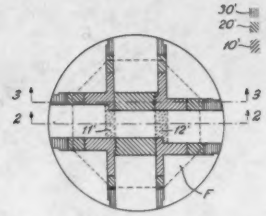
Henry F. Bertelsen, DK-6933, Kibaek, Denmark

Filed Dec. 12, 1978, Ser. No. 968,868

Claims priority, application Denmark, Dec. 15, 1977, 5588/77

Int. Cl.[2] B32B *3/10*; A47B *1/10*

U.S. Cl. 428—137 **2 Claims**



1. A tabletop basis of laminated construction comprising

an upper lamina having two symmetrically placed cut-out areas of pi-form to define four pairs of parallel slots, and pairs of cut-out zones extending from each pair of parallel slots, each said cut-out zone having a bottom slanting inwardly of said lamina;

a lower lamina having two symmetrically arranged pi-formed cut-out areas turned 90° relative to said cut-out areas of said upper lamina; and

an intermediate lamina having a cut-out area corresponding to said cut-out areas of said upper and lower lamina whereby with said laminae in superposed relation said cut-out areas of said laminae define cavities for slidably receiving extension bars of extension leaves.

4,201,817

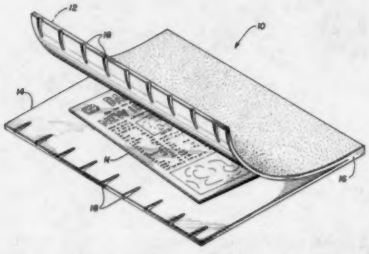
DOOR MAT

Thomas P. Duncan, Jr., 601 Riverside Dr., Newport News, Va., assignor to Thomas P. Duncan, Jr. and Frank Belvin, both of Newport News, Va.

Filed Jan. 6, 1976, Ser. No. 646,911

Int. Cl.[2] B32B *3/02, 7/08*

U.S. Cl. 428—141 **1 Claim**



1. A door mat formed of a flexible and waterproof material, comprising a lower substantially flat section and an upper substantially flat section hingedly connected adjacent one end thereof to said lower section, said upper and lower sections being of sufficient thickness and weight to resist separation when exposed to wind, said upper section being movable upwardly away from said lower section for the purpose of receiving and retaining an article therebetween, the inner surfaces of said upper and lower sections having drain openings at their front ends for the purpose of removing water or moisture accumulating between said sections.

4,201,818

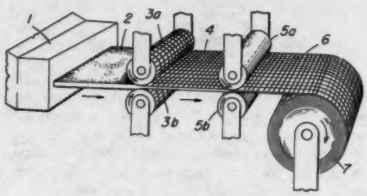
FLEXIBLE PLASTIC FOAM

Charles L. Rohn, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 732,236, Oct. 14, 1976, Pat. No. 4,105,738. This application May 30, 1978, Ser. No. 910,932

Int. Cl.[2] B32B *3/12, 3/26*

U.S. Cl. 428—159 **6 Claims**



1. A flexible, dead-foldable foamed plastic sheet having a compressed cellular structure, said sheet being further characterized by having in close proximity to at least one of its two major surfaces a substantial number of fractured compressed cells such that said sheet is rendered dead-foldable.

5. The flexible, dead-foldable foamed plastic sheet of claim 1 wherein said compressed cellular structure and said fractured compressed cells are substantially restricted to the portion of said foamed plastic sheet to be folded and the cellular structure of substantially all of said sheet not in the vicinity of said foldable portion is in its original uncompressed state.

4,201,819

LAMINATED CHIPBOARD

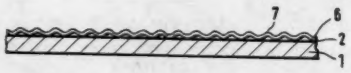
Manfred Schenz, Gittelde, Fed. Rep. of Germany, assignor to Wilhelm Mende & Company, Harz, Fed. Rep. of Germany

Filed Feb. 10, 1977, Ser. No. 767,345

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656713

Int. Cl.[2] B32B *3/00, 3/28*

U.S. Cl. 428—172 **7 Claims**



1. A laminated chipboard comprising:

a chipboard sheet having a generally planar surface;

a metal sheet; and

a thermoplastic binder interposing the chipboard sheet and the aluminum sheet, the thermoplastic binder binding the aluminum sheet to the surface of the chipboard sheets;

the aluminum sheet having a substantially uniform thickness within a first range of about 0.2 mm to 0.8 mm and the chipboard sheet having a substantially uniform thickness within a second range of about 2.5 mm to 6.0 mm, the aluminum sheet having a thickness within the first range so that the aluminum sheet is not influenced by the surface structure of the chipboard sheet, and the aluminum sheet and the chipboard sheet having thicknesses within the first range and the second range, respectively, so that the relative thickness of the aluminum sheet and the chipboard sheet are such that tensile stresses occuring between

the aluminum sheet and the chipboard sheet due to relative length variations caused by bending, thermal expansion and shrinkage from moisture variations do not exceed the shearing forces which can be accepted by the thermoplastic binder and therefor do not cause the aluminum sheet to become detached from the chipboard sheet.

4,201,820

MICROCELLULAR HETEROCYCLIC POLYMER STRUCTURES

Burnett H. Johnson, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 643,062, Dec. 22, 1975, abandoned, which is a division of Ser. No. 356,924, May 3, 1973, abandoned. This application Jan. 3, 1978, Ser. No. 866,442

Int. Cl.[2] B32B *3/14, 15/08*

U.S. Cl. 428—195 **7 Claims**

1. A flexible circuit article comprising:

(a) a closed cell, nonporous, non-foam microcellular polymeric article having a density of about 0.3 g/cc to about 1.5 g/cc in the shape of a film having a thickness of from about 1 mil to 20 mils, the polymeric article comprising a polymer selected from the group consisting of aromatic polyparabanic acids, aromatic polyhydantoins, aromatic polyamides, aromatic polyimides, aromatic polysulfones, aromatic polyimides-amides and combinations thereof; and

(b) a conductive circuit adhered to said film in a prearranged configuration.

4,201,821

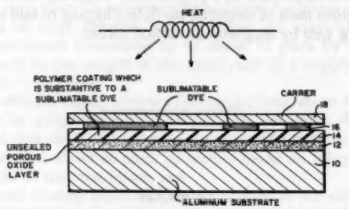
DECORATED ANODIZED ALUMINUM ARTICLE

Howard A. Fromson, 15 Rogues Ridge Rd., Weston, Conn. 06066, and Robert F. Gracia, Scituate, Mass., assignors to Howard A. Fromson, Weston, Conn.

Filed Dec. 22, 1978, Ser. No. 972,585

Int. Cl.[2] B32B *3/00, 15/04, 27/08;* **D06P** *1/16*

U.S. Cl. 428—203 **6 Claims**



1. Aluminum article decorated with a design comprising:

(a) an aluminum substrate having a porous, unsealed anodic oxide layer thereon;

(b) a polymeric coating over the oxide layer which is substantive to a sublimatable dye; and

(c) a sublimated dye forming said design in the oxide layer and the overlying polymeric coating.

4,201,822

NOVEL FABRIC CONTAINING MICROCAPSULES OF CHEMICAL DECONTAMINANTS ENCAPSULATED WITHIN SEMIPERMEABLE POLYMERS

Donald R. Cowsar, Birmingham, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 13, 1979, Ser. No. 48,285

Int. Cl.[2] B32B *5/16*

U.S. Cl. 428—240 **10 Claims**

1. A novel protective garment fabric comprising a (woven) clothing fabric containing microcapsules of decontamination agents for toxic chemical agents encapsulated with a semipermeable polymer wall material which is selectively permeable to toxic chemical agents but impermeable to said decontamination agent, thereby allowing toxic chemicals to diffuse with the microcapsules and undergo an irreversible neutralization reaction with said decontamination agents.

4,201,823

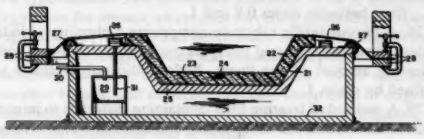
METHOD FOR MAKING FIBER REINFORCED ARTICLES

Larry M. Russell, Doylestown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 865,567, Dec. 29, 1977. This application Oct. 16, 1978, Ser. No. 951,694

Int. Cl.[2] B32B *7/00*

U.S. Cl. 428—246 **27 Claims**



1. An improved method for making a fiber-reinforced article comprising the steps of:

(a) applying a preformed plastic shell having the configuration of the desired article to a holding fixture therefore having sealing means at the peripheral edges thereof;

(b) applying to the surface of said shell fibrous reinforcement material;

(c) introducing to said reinforcement material a liquid plastic resin mixture;

(d) applying to the surface of said resin mixture-containing reinforcement material a preformed plastic membrane having the configuration of the desired article;

(e) sealing the peripheral edges of said membrane to the peripheral edges of said holding fixture to provide a molding system;

(f) applying a vacuum to said molding system to compact said molding system and to draw said resin mixture throughout said reinforcement material;

(g) hardening said resin mixture; and

(h) separating the resulting article from said plastic membrane and said holding fixture.

4,201,824

HYDROPHILIC POLYURETHANES AND THEIR APPLICATION AS SOIL-RELEASE, ANTI-SOIL REDEPOSITION, AND ANTI-STATIC AGENTS FOR TEXTILE SUBSTRATES

Robert Violland, Lyons, and Alain Lagasse, Villeurbanne, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation-in-part of Ser. No. 748,296, Dec. 7, 1976, abandoned. This application Jun. 7, 1977, Ser. No. 804,391

Int. Cl.[2] B32B *27/04;* **C08G** *18/42;* **D06M** *15/12;* **C08L** *75/06*

U.S. Cl. 428—262 **90 Claims**

1. A linear, hydrophilic polyurethane having a relative viscosity of at least about 2, said polyurethane comprising the reaction product of:

(a) from 10 to 70 weight percent of a polyester having a hydroxyl number of less than 120 mg KOH/g and an acid number of not more than 3 mg KOH/g, said polyester being the condensation product of an aromatic dicarboxylic acid or ester-forming derivative thereof with a diol having a molecular weight not in excess of about 300; and

(b) from 30 to 90 weight percent of an isocyanato prepolymer having NCO terminal groups, said prepolymer being the reaction product of a nonionic hydrophilic macrodiol

having a molecular weight of from about 300 to about 6,000 with a diisocyanate; and

(c) wherein the overall ratio of NCO/OH groups ranges from between about 0.8 and 1.

24. A detergent composition comprising (i) a surfactant and (ii) from about 0.1 to 5 weight percent of a linear, hydrophilic polyurethane having a relative viscosity of at least about 2, said polyurethane comprising the reaction product of:

(a) from 10 to 20 weight percent of a polyester having a hydroxyl number of less than 120 mg KOH/g and an acid number of not more than 3 mg KOH/g, said polyester being the condensation product of a dicarboxylic acid or ester-forming derivative thereof with a diol;

(b) from 30 to 90 weight percent of an isocyanato prepolymer having NCO terminal groups, said prepolymer being the reaction product of a nonionic hydrophilic macrodiol with a diisocyanate; and

(c) wherein the overall ratio of NCO/OH groups ranges from between about 0.8 and 1.

76. A fibrous textile substrate comprising a plurality of individual fibers, each of said fibers having sorbed thereon a soil-releasing amount of the linear, hydrophilic polyurethane as defined by claim **1**.

79. A method of treating fiber-containing materials to impart soil-resistance, anti-soil redeposition and anti-static characteristics thereto, which comprises washing said materials with water in the presence of an amount sufficient to impart said characteristics of the linear, hydrophilic polyurethane as defined by claim **1**.

85. A composition of matter which comprises a powder, said powder comprising from 10 to 90 weight percent of a mineral filler, and 90 to 10 weight percent of the linear, hydrophilic polyurethane as defined by claim **1**.

4,201,825

METALLIZED TEXTILE MATERIAL

Harold Ebneth, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,430

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743768

Int. Cl.[2] **B32B** *15/14, 15/20*

U.S. Cl. 428—263 **8 Claims**

1. A metallised (metal coated) textile material having a surface resistance, as measured at 23° C./50% relative humidity in accordance with DIN No. 54345, of at most 1×10^3 ohm.

4,201,826

POLYMERIZABLE UNSATURATED POLYESTER COMPOSITIONS USEFUL IN THE MANUFACTURE OF MULTILAYER LAMINATES AND LAMINATES PREPARED THEREFROM

Perry Nylander, Gothenburg, Sweden, assignor to AB Syntes, Nol, Sweden

Filed Jan. 2, 1979, Ser. No. 51

Claims priority, application Sweden, Jan. 5, 1978, 7800148

Int. Cl.[2] **C08L** *91/06, 67/06, 67/08;* **B32B** *17/04*

U.S. Cl. 428—268 **17 Claims**

1. A polymerizable unsaturated polyester composition useful in the manufacture of multilayer laminates, consisting essentially of:

(1) a polyester of a polyhydric alcohol and a polycarboxylic acid, at least one of which is ethylenically unsaturated;

(2) a monomer copolymerizable with the unsaturated polyester and having a boiling point below 150° C;

(3) an additive forming a surface film that inhibits volatilization of monomer from the polyester composition; and

(4) a hydrophobic compound soluble at least in part both in the unsaturated polyester and in the film-forming additive that either

(a) has an isoprene unit structure, or

(b) is acyclic and has at least one ester and/or ether bond; and at least two terminal hydrocarbon groups each with at least one ethylenically unsaturated group.

15. A multilayer laminate comprising a plurality of adjacent layers of a polymerizable unsaturated polyester resin composition in accordance with claim **1**, polymerized in situ and having good adhesion between adjacent layers.

4,201,827

MAGNETICALLY SUPPORTED PARTICLE MATRIX FOR ACCUMULATING OR AFFECTING SUBSTANCES DISSOLVED OR FINELY DISPERSED IN A LIQUID OR GAS

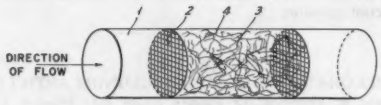
Dieter Heitkamp, Jülich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 23, 1977, Ser. No. 854,095

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1976, 2653551

Int. Cl.[2] **B01D** *35/06;* **B03C** *1/00;* **B32B** *5/16*

U.S. Cl. 428—283 **7 Claims**



1. A matrix of particles for surface-interaction with a substance dissolved or dispersed in a liquid or gas comprising:

a supporting porous web of a composite material consisting of chemically inert fibrous material bearing, embedded therein, powder of a permanently magnetic material, and

a porous mass of magnetic particles clinging to said supporting web by magnetic attraction forces.

4,201,828

IMPACT RESISTANT SAFETY GLASS PANEL

Wolfgang Triebel, Hanau; Siegfried Hari, Klein-Welzheim; Hubert Koert, Hanau, all of Fed. Rep. of Germany, and Fritz Evers, Mauritz-Lindenweg 33, 44 Munster, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main and Fritz Evers, Münster, both of, Fed. Rep. of Germany

Continuation of Ser. No. 677,640, Apr. 16, 1976, abandoned. This application Jun. 5, 1978, Ser. No. 912,280

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1975, 2516629

Int. Cl.[2] **B32B** *27/38, 17/10*

U.S. Cl. 428—332 **10 Claims**

1. Impact resistant glass laminate comprising a silicate panel and a polycarbonate panel, said silicate glass panel being of at least 6 mm in thickness and disposed on the side of the laminate subject to a potential impact and wherein the glass panel is bonded to said polycarbonate panel of at least 1.5 mm in thickness by means of a methacrylate resin cured in situ between said panels, and said resin being formed from at least 50% by weight, based on the total weight of the resin, of 2-ethylhexyl methacrylate.

4,201,829

METAL PLATED THERMOPLASTIC ARTICLES

William C. Mast, Stow, and Richard G. Bauer, Kent, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 837,079, Sep. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 656,471, Feb. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 528,387, Nov. 29, 1974, abandoned. This application Aug. 14, 1978, Ser. No. 933,245

Int. Cl.[2] B32B *15/08*

U.S. Cl. 428—332 6 Claims

1. A metal plated, non-burning highly light transmittant and impact resistant molded thermoplastic article consisting of:

A. a molded substrate of metal platable, non-burning, high light transmittant and impact resistant thermoplastic material comprising a blend of

(1) an admixture of

(a) 100 parts by weight of a rubbery copolymer resulting from the copolymerization of a mixture of a diolefin monomer and a styrene monomer having grafted thereto from 30 to 50 parts by weight, based on 100 parts by weight of the grafted rubbery copolymer, of a terpolymer resulting from the copolymerization of a mixture of a methacrylic acid ester monomer, a styrene monomer and acrylonitrile monomer in the presence of said rubbery copolymer, and

(b) from 100 to 200 parts by weight of a resinous terpolymer resulting from the copolymerization of a mixture of a methacrylic acid ester monomer, a styrene monomer and an acrylonitrile monomer,

and wherein the total amount of the diolefin in the admixture of (1) ranges from about 10 to 30 parts by weight, the total amount of the styrene in the admixture of (1) ranges from about 30 to 40 parts by weight, the total amount of the methacrylic acid ester in the admixture of (1) ranges from about 20 to 25 parts by weight all based on 100 parts by weight of the total admixture of (1) and the total amount of the acrylonitrile in the admixture of (1) ranges from about 20 to 25 parts by weight based on 100 parts by weight of the total admixture of (1) and

(2) a vinyl chloride polymer selected from the group consisting of vinyl chloride homopolymer and vinyl chloride copolymers containing up to about 15 parts by weight based on the weight of the copolymer of a copolymerizable comonomer

and wherein the admixture of (1) ranges from about 40 to 60 parts by weight based on 100 parts by weight of the total blend and the vinyl chloride polymer of (2) ranges from about 60 to about 40 parts by weight based on 100 parts by weight of the total blend, and

B. a metal coating deposited on and bonded to the surface of said molded substrate, said metal coating being selected from the group of metals consisting of copper, nickel chromium and alloys containing copper, nickel and chromium

and wherein the peel adhesion strength between the metal coating and the thermoplastic substrate ranges from about 5.0 to about 10.0 pounds as measured by the ASTM D-429 Method B test procedure.

4,201,830

IMPACT ABSORBANT ARTICLE COMPRISING FRANGIBLE CORE HAVING A TOUGH-SKINNED COVERING AND METHOD OF MAKING SAME

Carl H. Wollen, Comstock Park, Mich., assignor to U.S. Industries, Grand Rapids, Mich.

Filed Sep. 11, 1978, Ser. No. 941,025

Int. Cl.[2] B62D *1/04, 1/06;* E04F *11/08, 11/18*

U.S. Cl. 428—375 60 Claims

1. A method for minimizing injury to an individual impacting a structure having a rod-like lateral cross section such as a handrail, steering wheel or the like, said method comprising:

providing said structure with an inner member having a rod-like lateral cross section and being made of a structural plastic material which is capable when hardened of providing rigid, structural strength, but which is frangible upon sharp impact of the type encountered in vehicle accidents so as to absorb energy from the impact;

providing an exterior covering surrounding said inner member made of a second plastic material which is somewhat stretchable, flexible, tough-skinned and non-abrasive and of sufficient strength and sufficient thickness that in the event said inner member breaks, said exterior covering prevents sharp ends or edges of the broken inner member from protruding and impaling an individual impacting said structure.

21. An energy absorbing structure having a rod-like lateral cross section such as a hand rail, steering wheel or the like, comprising: an inner member of rod-like lateral cross section made of a rigid, structural plastic material capable of providing structural strength but being frangible upon sharp impact of the type encountered in vehicle accidents so as to absorb energy from the impact; an exterior covering generally surrounding said inner member and being made of a somewhat stretchable, flexible, tough skinned and nonabrasive plastic material of sufficient thickness and strength that in the event said inner member breaks, said covering prevents sharp ends or edges of the broken inner member from protruding and impaling an individual impacting said structure.

41. A method for manufacturing an energy absorbing structure having a rod-like lateral cross section such as a hand rail, steering wheel or the like, said method comprising of: molding an inner member into a configuration having a rod like lateral cross section of a structural plastic material which is capable when hardened of providing rigid, structural strength, but which is frangible upon sharp impact of the type encountered in vehicle accidents so as to absorb energy from the impact; placing said inner member into a second mold having a cavity which is larger in lateral cross section than the lateral cross section of said inner member and molding a second plastic material generally around said inner member within said mold to define an exterior covering on said inner member, said second plastic material being, when cooled and hardened, somewhat stretchable, flexible, tough skinned and nonabrasive and of sufficient strength, and molded to sufficient thickness, that in the event said inner member breaks, said exterior covering prevents sharp ends or edges of the broken inner member from protruding and impaling an individual impacting said structure.

4,201,831

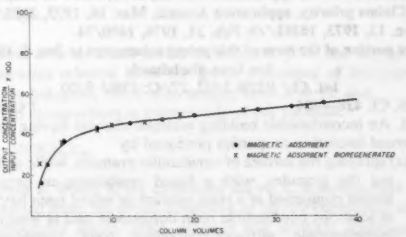
MAGNETIC ADSORBENT COMPOSITE

George M. J. Slusarczuk, Schenectady, and Ronald E. Brooks, Guilderland, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 27, 1976, Ser. No. 726,960

Int. Cl.[2] B22F *1/02*

U.S. Cl. 428—403 6 Claims



6. A magnetic adsorbent composite ranging in diameter from about one micron to about 10 millimeters consisting essentially of a magnetic substrate particle ranging in diameter from about

100 Angstroms to about 4 millimeters, said substrate particle being at least substantially encapsulated with elemental active carbon in a thickness ranging from about 100 Angstroms to about 10 millimeters, with a plurality of said substrate particles in a matrix of said active carbon.

4,201,832

NON MELT-DRIP FLAME RETARDANT POLYCARBONATE COMPOSITION

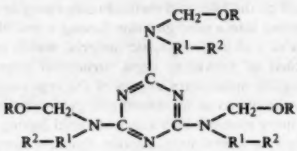
Walter L. Hall, Mt. Vernon, and William J. J. O'Connell, Evansville, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Jun. 23, 1978, Ser. No. 918,485

Int. Cl.[2] B32B *27/36*

U.S. Cl. 428—412 **12 Claims**

1. A coated non melt-drip flame retardant polycarbonate article consisting essentially of an admixture of an aromatic carbonate polymer and a flame retardant amount of a compound selected from the group consisting of the alkali metal and alkaline earth metal salts of unsubstituted and substituted monomeric or polymeric aliphatic, aromatic or heterocyclic sulfonic acids and mixtures thereof, said polycarbonate article having deposited on the surface thereof an adherent, non melt-drip, abrasion, scratch and chemical solvent resistant coating consisting essentially of the reaction products of: (i) a melamine represented by the general formula



wherein each R is independently selected from hydrogen or a lower alkyl group, each R^1 is independently selected from an alkylene group, and each R^2 is independently selected from a hydroxy group, a lower alkoxy group, or a lower alkyl group; (ii) a lower alkyl diol; (iii) a polyester or polyether polyol; and (iv) an adhesion promoter and leveling agent consisting essentially of the reaction products of a melamine and a hydroxy functional acrylate.

4,201,833

BUILDING MATERIAL ELEMENTS, PARTICULARLY BUILDING BOARDS, AND A PROCESS FOR THEIR PRODUCTION

Kurt Kirsch, Vienna; Volkmar Hilzensauer, Amstetten; Günther Pflug, Vienna; Felix Wehrmann, Vienna, and Gerald Maresch, Vienna, all of Austria, assignors to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft, Winer Neudorf, Austria

Division of Ser. No. 657,273, Feb. 11, 1976, Pat. No. 4,093,488, which is a division of Ser. No. 450,847, Mar. 13, 1974, abandoned. This application Mar. 22, 1978, Ser. No. 888,953

Claims priority, application Austria, Mar. 16, 1973, 2385/73; Dec. 12, 1973, 10381/73; Feb. 21, 1974, 1400/74

The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.

Int. Cl.[2] B32B *5/02, 27/42;* C08J *9/00*

U.S. Cl. 428—404 **7 Claims**

1. An incombustible building material element having good thermal insulation properties produced by

(a) spraying the surface of vermiculite granules, while agitating the granules, with a liquid containing an organic binder comprised of a resin mixture or mixed resin having at least one combustible resin component and at least one incombustible nitrogen-containing resin component, wherein the amount of resin, calculated as solid substance, coated on the granules is 2 to 30% by weight, based on the weight of the granules,

(b) placing the coated granules in a first press and pressing the coated granules without heating to bond them to form a transportable molded product,

(c) placing the transportable molded product in a second press provided with a heating means, and

(d) pressing and heating the transportable molded product at an elevated temperature to further bond the granules and organic binder in the molded product to form an incombustible building material element with good thermal insulation properties.

4,201,834

POWDER COMPOSITION AND METHOD OF PREPARATION

Martin J. Hannon, Martinsville, and Richard K. Greene, Summit, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 844,812, Oct. 25, 1977, abandoned. This application Dec. 5, 1978, Ser. No. 966,694

Int. Cl.[2] B32B *5/16*

U.S. Cl. 428—407 **37 Claims**

1. A non-tacky powder composition useful for coating applications which comprises

(A) tacky powder particles comprising a melt blend mixture of

(1) a block copolymer which is either unhydrogenated or selectively hydrogenated to at least some degree and having at least two kinds of polymer blocks wherein one polymer block is designated by A and a second polymer block is designated by B such that prior to hydrogenation,

(a) each A is a polymer end block of a monovinyl or alpha alkyl monovinyl arene having a number average molecular weight in the range of from about 5,000 to about 75,000, said blocks A comprising from about 5 to about 50% by weight of the total block copolymer, and

(b) each B is a polymer mid block having a number average molecular weight of from about 30,000 to about 300,000, and formed from a conjugated diene selected from homopolymers of at least one conjugated diene having 4 to 10 carbon atoms per molecule, said blocks B comprising from about 50 to about 95% by weight of the total block copolymer, and

(2) at least one melt flow modifier selected from the group consisting of

(a) monovinyl arene homopolymers,

(b) alpha alkyl monovinyl arene homopolymers, and

(c) copolymers of monovinyl arenes and alpha alkyl monovinyl arenes wherein the aromatic portions of the polymers described in (2) (a), (b) and (c) are at least partially hydrogenated to remove the aromatic character thereof, and

adhering to the tacky surface of these tacky particles in a non-continuous layer,

(B) smaller solid particles which are hard and non-tacky and which comprise at least one melt flow modifier of the group described in (A) (2) with the provision that the melt flow modifier have a glass transition temperature of at least about 20° C.

4,201,835

BOILING WATER AND WEATHER RESISTANT CELLULOSE FIBER REINFORCED BOARD MATERIAL

Karl Jellinek, Iserlohn-Letmathe, Austria, and Rolf Müller, Duisburg, Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 28, 1978, Ser. No. 890,894

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 2716971

Int. Cl.[2] B32B *27/40*

U.S. Cl. 428—288 **4 Claims**

1. Boiling water and weather resistant cellulose fiber reinforced board material comprising cellulose containing reinforcing material and a binder comprising a mixture of:

(a) a weakly alkaline phenol formaldehyde condensate resin in aqueous solution with a phenolic compound to formaldehyde mol ratio of from 1:1.5 to 1:3.0, and with an alkali content of ≦ 15% by weight NaOH or KOH, related to the solids content of the resin;

(b) a difunctional isocyanate, poly-functional isocyanate or mixture thereof in a quantity of from 5% to 25% by weight, related to the resin (a); and

(c) a tertiary alkyl amine, aralkyl amine, alkylenpolyamine or mixture thereof in a quantity of from 0.1% to 5% by weight, related to the resin (a).

4,201,836

ALUMINUM SUBSTRATES GRAINED WITH A SATURATED SOLUTION OF ALUMINUM SALTS OF MINERAL ACIDS

Jen-Chi Huang, Yonkers, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,222

Int. Cl.[2] G03C *1/94;* **B41N** *3/02, 3/04;* **C25F** *3/04*

U.S. Cl. 428—457 **18 Claims**

1. A process for the treatment of an aluminum sheet to provide thereon a substantially consistent and uniformly roughened surface suitable for lithographic uses, which comprises immersing said aluminum in a saturated aqueous solution of an aluminum salt of a mineral acid.

10. A lithographic printing plate which comprises the aluminum sheet produced by the method of claim 1 and a lithographically suitable photosensitizer coated on said sheet.

4,201,837

BONDED AMORPHOUS METAL ELECTROMAGNETIC COMPONENTS

John H. Lupinski, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,261

Int. Cl.[2] G11B *5/16;* **H01F** *3/04;* **B32B** *15/08*

U.S. Cl. 428—457 **5 Claims**

1. A method for preparing a laminate composite for a magnetic core useful in a transformer or stator comprising the steps of

assembling a plurality of thin polymer-coated metal ribbons of a magnetic metal in an applied magnetic field, said magnetic metal being at least 50 percent amorphous and having the composition represented by the formula,

$$A_xZ_y,$$

wherein A is one or more of Fe, Co, Ni, Mo, W, Cr, and V, Z is one or more of Si, C, B, P, Al, Sn, Sb, Ge, In, and Be, x is an atomic percentage of from 70–90, and y is an atomic percentage of from 30–10,

said polymer-coated ribbons being disposed in a plurality of layers, each of said layers being composed of a plurality of said polymer-coated ribbons arranged with at least one edge of each polymer-coated ribbon contiguous with an edge of another polymer-coated ribbon and said layers being disposed relative to each other so that abutting edges in contiguous layers are covered by solid magnetic metal,

simultaneously subjecting the polymer-coated ribbons so assembled to pressurization in excess of about 1000 psi and to heating to a temperature in excess of the annealing temperature and below the recrystallization temperature of said magnetic metal, and

converting the annealed assembly of ribbons as required to convert said assembly into a shaped laminate suitable for construction of said magnetic core.

5. The laminate composite produced by the method of claim 1.

4,201,838

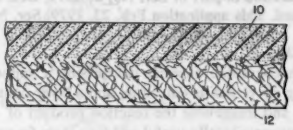
LAMINATED MICROPOROUS ARTICLE

Bruce S. Goldberg, Clifton, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Jun. 16, 1978, Ser. No. 915,916

Int. Cl.[2] H01M *2/16*

U.S. Cl. 429—145 **9 Claims**



1. As an article of manufacture, a laminated microporous article combination comprising a first layer of microporous material, wherein the micropores are substantially all of a size less than 2 microns and a layer thickness of 2 mils and greater and a second layer of porous backing material laminated to said first layer, said second layer comprising a heat-bonded fibrous polyester non-woven web of a thickness of about 8 mils and greater and an electrical resistance, in a battery acid electrolyte, of about 0.25 mΩ in^2/mil, said laminate having a total thickness of about 10 to 40 mils for a backweb of a microporous layer and said backing material.

4,201,839

CELL CONTAINING AN ALKALI METAL ANODE, A SOLID CATHODE, AND A CLOSOBORANE AND/OR CLOSOCARBORANE ELECTROLYTE

Jack W. Johnson, and M. Stanley Whittingham, both of Fanwood, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 1, 1978, Ser. No. 956,746

Int. Cl.[2] H01M *6/14, 10/36*

U.S. Cl. 429—194 **44 Claims**

1. An electrochemical cell, comprising:

(a) an alkali metal-containing anode;

(b) a solid cathode; and,

(c) an electrolyte containing one or more compounds selected from the group consisting of:

(i) closoborane compounds of the formula:

$$Z_2B_nX_n$$

wherein Z is an alkali metal, B is boron, X is one or more substituents selected from the group consisting of hydrogen and the halogens, and n is an integer from 6 to 12; and,

(ii) closocarborane compounds of the formula:

$$ZCRB_mX_m$$

wherein Z, B and X are as defined above, C is carbon, and R is selected from the group consisting of inertly substituted and unsubstituted alkyls, aryls, alkaryls and aralkyls, hydrogen, and the halogens, said compounds being dissolved in aprotic organic solvent in the presence of a chelating agent sufficient to enable the migration of ions between said anode and said cathode.

4,201,840

PHOTOGRAPHIC FILM UNITS CONTAINING A POLYMERIC MORDANT WHICH COVALENTLY BONDS WITH CERTAIN DYES

Gerald A. Campbell, Webster; Hyman Cohen, Hilton; Lewis R. Hamilton, and George Villard, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

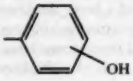
Division of Ser. No. 906,289, May 15, 1978, which is a continuation-in-part of Ser. No. 839,879, Oct. 6, 1977, abandoned. This application Feb. 22, 1979, Ser. No. 13,858

Int. Cl.[2] G03C *1/40, 1/48, 1/06, 1/10*

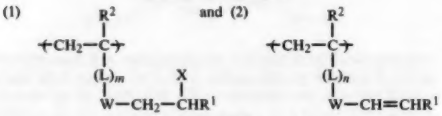
U.S. Cl. 430—17 **7 Claims**

1. A photographic element comprising a support; a layer comprising silver halide emulsion; and a layer containing non-uniformly and imagewise the reaction product of

(a) a photographically useful and/or active fragment having appended thereto a moiety selected from the group consisting of ZNHR, $-SO_2NHR$ and



wherein R is H or alkyl and Z is selected from the group consisting of alkylene, arylenealkylene, cycloalkylene and with R can be taken together with the NH to complete an N containing heterocyclic group and (b) a polymeric mordant, wherein said polymer contains recurring units having the formula selected from the group consisting of



wherein

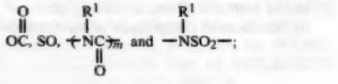
R^2 is H or alkyl;

R^1 is H, alkyl or aryl;

L is a bivalent linking group providing a linkage between the vinyl group and W selected from the group consisting of alkylene, arylene, arylenealkylene, $COOR^3$ and $CONHR^3$;

R^3 is selected from the group consisting of alkylene, arylene and arylenealkylene;

W is an electron withdrawing group selected from the group consisting of SO_2, CO,



m is 1 or 2;

n is 0 or 1;

with the proviso that when n is O, W is SO_2 or

and

X is a leaving group which can be displaced by nucleophiles or eliminated in the form of HX by treatment with base;

wherein said reaction product is formed (a) by displacement of X by said moiety in recurring unit (1), or (b) by addition of said moiety to the double bond of recurring unit (2).

4,201,841

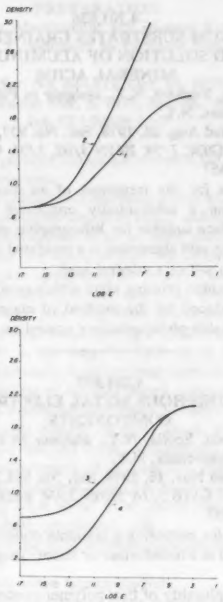
PROCESS FOR PREPARING PHOTOGRAPHIC ELEMENTS EXHIBITING DIFFERENTIAL MICRO- AND MACRO-AREA RECORDING CHARACTERISTICS

Nicholas H. Groet, and Jacque K. Lindsay, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 14, 1978, Ser. No. 924,773

Int. Cl.[2] G03C *1/36*

U.S. Cl. 430—567 **9 Claims**



1. In a process of forming a photographic element capable of forming a micro-image of relatively high contrast and a macro-image of relatively low contrast comprising

coating onto a support one or more silver halide emulsion layers, each of the silver halide emulsion layers present in the photographic element being primarily responsive to an identical portion of the visible spectrum upon imagewise exposure of the photographic element, and

at least one of the emulsion layers containing silver haloiodide grains capable of forming a latent image upon imagewise exposure and a hydrophilic colloid suspending the grains,

the improvement comprising

in preparing at least one of the emulsion layers containing silver haloiodide grains, forming a blended silver halide emulsion by interspersing with the hydrophilic colloid suspended latent image-forming silver haloiodide grains additional silver halide grains which are surface fogged as though exposed to imaging radiation of maximum intensity to render them spontaneously developable independent of imagewise exposure of the photographic element, said additional, surface fogged silver halide grains being interspersed in a concentration of 0.1 to 20 percent, based on the total weight of silver halide.

4,201,842
RADIATION CURABLE SOLVENT-FREE COMPOSITIONS

Louis J. Lombardi, Roselle, and Roy J. Coyne, Hometown, both of Ill., assignors to The Richardson Company, Des Plaines, Ill.

Continuation of Ser. No. 405,407, Oct. 11, 1973, abandoned. This application Nov. 5, 1976, Ser. No. 739,183

Int. Cl.[2] G03C *1/68*

U.S. Cl. 430—281 **13 Claims**

1. A photosensitive solvent-free resin system curable by exposure to radiation comprising:

(a) from about 25 to about 75 weight percent of an ester of an ethylenically unsaturated organic acid and an aliphatic polyhydric alcohol;

(b) from about 1 to about 35 weight percent of a photoinitiator; and

(c) from about 5 to about 35 weight percent of a copolymer of styrene and an unsaturated alcohol having 3 carbon atoms, the relative amounts of said styrene and unsaturated alcohol in said copolymer being sufficient to provide improved web rub resistance, gloss and toughness to the cured resin system.

4,201,843
PROCESS FOR MANUFACTURING TYLOSIN DERIVATIVES

Rokuro Okamoto, Fujisawa; Tsumoru Fukumoto, Sagamihara; Akira Takamatsu, Yokohama, and Tomio Takeuchi, Tokyo, all of Japan, assignors to Sanraku Ocean Co., Ltd., Tokyo, Japan

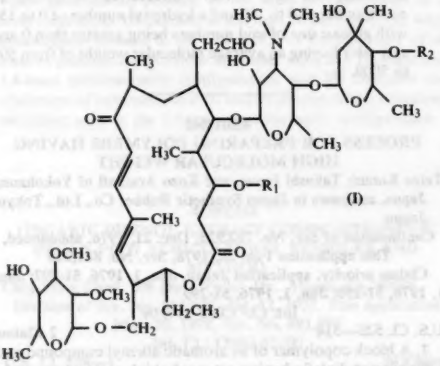
Division of Ser. No. 708,151, Jul. 23, 1976, Pat. No. 4,092,473. This application Feb. 27, 1978, Ser. No. 881,279

Claims priority, application Japan, Aug. 1, 1975, 50/93053; Sep. 12, 1975, 50/110010; Dec. 27, 1975, 50/158388; May 15, 1976, 51/55626

Int. Cl.[2] C12P *19/62*; C12R *1/55*

U.S. Cl. 435—76 **25 Claims**

1. A process for producing acyl derivatives of tylosin having the general formula I,

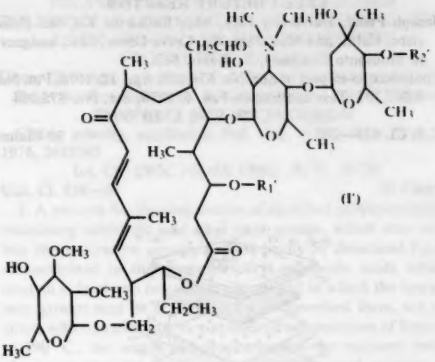


(I)

wherein

R_1 is H, acetyl or propionyl group and R_2 is H, n-butyryl or isovaleryl group, the case where both R_1 and R_2 are H being excluded, and

the acid addition salts thereof, from a tylosin substrate having the general formula I',



(I')

wherein

both R_1' and R_2' are H, or one of them is H and the other is C_2–C_5 acyl group,

which comprises incubating said tylosin substrate with a microbial agent obtained from a microorganism belonging to the genus Streptomyces and capable of acylating at least one hydroxyl group at the 3- and 4''-positions of said substrate in the presence of C_2–C_5 acyl donor, said microbial agent being selected from a growing cell in a culture medium, a resting cell, a dried cell, a cell homogenate of said microorganism, a supernatant solution and an enzymatic preparation obtained therefrom.

4,201,844
PROCESS FOR PRODUCING A HYDROXYFATTY ACID ESTER

Shigeo Inoue, Saitama, and Norioki Miyamoto, Yokkaido, both of Japan, assignors to Kao Soap Company, Limited, Tokyo, Japan

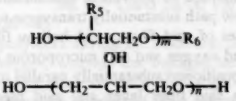
Filed Jul. 28, 1978, Ser. No. 928,867

Claims priority, application Japan, Aug. 1, 1977, 52/92427

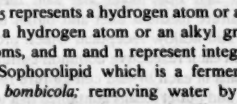
Int. Cl.[2] C12P *7/62*

U.S. Cl. 435—135 **7 Claims**

1. A process for producing an hydroxyfatty acid polyhydric alcohol ester, which comprises; adding at least one polyhydric alcohol represented by the formula (III) or (IV),



(III)



(IV)

wherein R_5 represents a hydrogen atom or a methyl group, R_6 represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms, and m and n represent integers from 1 to 6, to hydrated Sophorolipid which is a fermentation product of *Torulopsis bombicola;* removing water by distillation under reduced pressure whereby a mother liquor is generated; and subjecting the resulting mixture to an alcoholysis reaction by adding an acid catalyst to the mother liquor.

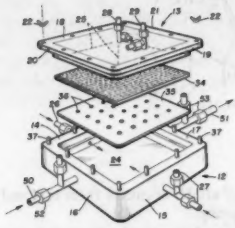
4,201,845
CELL CULTURE REACTOR

Joseph Feder, University City, Mo.; Katharine Ku, San Francisco, Calif., and Mau-Jung Ku, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 676,100, Apr. 12, 1976, Pat. No. 4,087,327. This application Feb. 6, 1978, Ser. No. 875,464

Int. Cl.[2] C12K 9/00; C12B 1/10

U.S. Cl. 435—285 10 Claims



1. A cell culture reactor comprising: a housing, a reaction chamber within said housing, external culture medium inlet and outlet means disposed in walls in said housing and in fluid communication with said chamber, a plurality of elongate, selectively permeable, open ended hollow fibers arranged in a shallow layer within said chamber whereby the open ends of said fibers lead to external inlet and outlet gas means disposed in walls in said housing and in gaseous communication with the interior of said hollow fibers, and microporous distributor plate means adapted to provide a substantially uniform culture medium flow path substantially transverse to the plane of the elongate axes of said fibers, said hollow fibers being permeable to air and oxygen and said microporous distributor plate means being positioned substantially parallel to said fiber layer and between said fiber layer and said medium inlet means.

10. A cell culture reactor module comprising, a hollow receptacle for incubation containing parallel shelves capable of supporting cell culture reactors in a spaced-apart manner, a plurality of vertically stacked and spaced-apart cell culture reactors disposed on said shelves within said hollow receptacle for incubation, each said reactor comprising: a housing, a reaction chamber within said housing, external culture medium inlet and outlet means disposed in walls in said housing and in fluid communication with said chamber, a plurality of elongate, selectively permeable, open ended hollow fibers arranged in a shallow layer within said chamber whereby the open ends of said fibers lead to external inlet and outlet gas means disposed in walls in said housing and in gaseous communication with the interior of said hollow fibers, and microporous distributor plate means adapted to provide a substantially uniform culture medium flow path substantially transverse to the plane of the elongate axes of said fibers, said hollow fibers being permeable to air and oxygen and said microporous distributor plate means being positioned substantially parallel to said fiber layer and between said fiber layer and said medium inlet means, common culture medium inlet and outlet means contained in a wall of said hollow receptical which provide fluid communication with each respective common culture medium inlet and outlet means in each of said cell culture reactors and a common gas inlet and outlet means contained in a wall of said hollow recepticle which provide gaseous communication with each respective common gas inlet and outlet means in each of said cell culture reactors.

4,201,846
DIMENSIONALLY STABLE POLYURETHANE FOAM

Clifton L. Kehr, Silver Spring; Louis L. Wood, Rockville; Nelson S. Marans, Silver Spring, and Glenn E. Fulmer, Clarksville, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 854,600, Nov. 25, 1977, abandoned. This application Nov. 24, 1978, Ser. No. 963,600

Int. Cl.[2] C08G 18/14

U.S. Cl. 521—137 19 Claims

1. A reinforced, hydrophilic polyurethane foam comprising a poly(urea-urethane) foam matrix having an oxyalkylene backbone containing at least 40 mole percent oxyethylene, said foam matrix having uniformly distributed therein 1.0 to 15% by weight of the foam matrix of substantially hydrophilic, reinforcing fibers selected from the group consisting of polyvinyl alcohol homopolymer and copolymers of polyvinyl alcohol, and polyvinyl chloride.

4,201,847
PROCESS OF PREPARING FOAMS WITH INTERNAL MOLD-RELEASE AGENTS

Helmut Kleimann; Wulf von Bonin, both of Leverkusen, and Heinz-Georg Schneider, Gummersbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 438,071, Jan. 30, 1974, abandoned. This application Jul. 13, 1978, Ser. No. 924,260

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1973, 2307589

Int. Cl.[2] C08G 18/14, 18/36

U.S. Cl. 521—172 12 Claims

1. In a process for the production of molded articles of polyurethane foam by foaming a reaction mixture in a closed mold, said reaction mixture comprising a polyisocyanate, an organic compound containing at least two hydrogen atoms reactive with isocyanates, and a blowing agent, the improvement wherein said polyisocyanate consists of the reaction product of

(a) an organic polyisocyanate, and

(b) from 0.5 to 25% by weight based on the quantity of said organic polyisocyanate, of an active hydrogen-containing fatty acid ester prepared by reacting an alcohol with an aliphatic, saturated or unsaturated fatty acid, said ester being characterized in that at least one aliphatic acid which contains more than 8 carbon atoms is built into the molecule, said ester further characterized as having an acid number of 0 to 100 and a hydroxyl number of 0 to 150 with at least one of said numbers being greater than 0 and said ester having an average molecular weight of from 500 to 5000.

4,201,848
PROCESS FOR PREPARING POLYMERS HAVING HIGH MOLECULAR WEIGHT

Teizo Kotani; Takashi Inoue, and Kozo Arai, all of Yokohama, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 752,925, Dec. 21, 1976, abandoned. This application Feb. 28, 1978, Ser. No. 881,914

Claims priority, application Japan, Jan. 1, 1976, 51-297; Jan. 1, 1976, 51-298; Jan. 1, 1976, 51-299

Int. Cl.[2] C08F 297/04

U.S. Cl. 525—314 2 Claims

1. A block copolymer of an aromatic alkenyl compound and a conjugated diolefin having extremely high molecular weight comprising

(A) at least one poly (aromatic alkenyl) block having atactic structure with molecular weight (Mw) of 1,000,000 to 30,000,000, and

(B) at least one poly (conjugated diolefin) block having microstructure of 15–30% by weight of cis-1,4, 60–75% by weight of trans-1,4 and 10–25% by weight of vinyl

structure with molecular weight (Mw) of 50,000 to 10,000,000,

the proportion of said poly (aromatic alkenyl) block in the block copolymer being 10 to 95% by weight.

4,201,849

ACETAL RESIN COMPOSITION

Masaharu Kimura, Tokyo; Yoshiharu Otuki, Urawa; Akitoshi Sugio, Ohmiya, and Tomotaka Furusawa, Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 891,121, Mar. 28, 1978, abandoned. This application Nov. 28, 1978, Ser. No. 964,445
Claims priority, application Japan, Apr. 1, 1977, 52-36207
Int. Cl.[2] C08G *63/68*
U.S. Cl. 525—401 **5 Claims**

1. An acetal resin composition comprising an admixture of 100 parts by weight of an acetal resin and 0.01 to 15 parts by weight of a petroleum resin, said petroleum resin being prepared by polymerizing a cracked petroleum fraction boiling between −15° C. and 200° C. and containing unsaturated hydrocarbons, and having a molecular weight in the range of 400 to 2500 and a second order transition temperature in the range of 35° to 90° C.

4,201,850

STEREOREGULATED COPOLYMERS OF BUTADIENE AND PIPERYLENE

Erik G. M. Tornqvist, Scotch Plains, and Albert M. Gessler, Cranford, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 767,146, Feb. 9, 1977, abandoned, which is a division of Ser. No. 665,318, Mar. 9, 1976, abandoned, which is a division of Ser. No. 490,284, Jul. 22, 1974, Pat. No. 3,972,862. This application Aug. 7, 1978, Ser. No. 931,472
Int. Cl.[2] C08F *4/64*
U.S. Cl. 526—337 **1 Claim**

1. Copolymer of 1,3-butadiene and piperylene containing at least 50 mol percent 1,3-butadiene characterized by: (a) A random distribution of monomer units in the polymer chain; (b) Vinyl unsaturation pendant to the main polymer chain at a level from about 1.0 percent to less than 10 percent of the total unsaturation present in the polymer; (c) Enchainment of at least 95 percent of piperylene monomer units in a 1,2-trans and 1,4-trans stereoisomeric configuration; and (d) Selective enchainment of between about 50 and 95 percent of the butadiene monomer units in the 1,4-trans-stereoisomeric configuration.

4,201,851

ORGANIC PHENOL EXTRACT COMPOSITIONS OF PECAN PITH AGRICULTURAL RESIDUES AND METHOD

Chia-Ming Chen, 205 Dove Valley Dr., Athens, Ga. 30606

Division of Ser. No. 814,920, Jul. 12, 1977. This application Mar. 30, 1978, Ser. No. 891,596
Int. Cl.[2] C08G *83/00*
U.S. Cl. 528—1 **16 Claims**

1. Phenolic compounds and protein containing extract composition consisting essentially of that portion of pecan piths that has been reacted with an aqueous alkaline solution to form a water-soluble or water-suspendible composition containing phenolic compounds and at least 2% by weight of crude protein based upon 100% by weight of total extracted organic substances.

4,201,852

POLYURETHANES BASED ON MODIFIED POLYISOCYANATES CONTAINING SULPHONIC ACID ESTER GROUPS AND PROCESS FOR THE PRODUCTION THEREOF

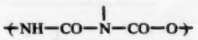
Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 3, 1977, Ser. No. 848,068
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1976, 2651065
Int. Cl.[2] C07C *143/68*; C08G *18/77, 18/79*
U.S. Cl. 528—67 **10 Claims**

1. A process for the preparation of modified polyisocyanates containing sulphonic acid alkyl ester groups, which may contain the isocyanate groups at least partly in dimerized form, characterized in that isocyanatoaryl sulphonic acids which contain at least two isocyanate groups and in which the isocyanate groups may be at least partly in dimerized form, are reacted with oxiranes and/or oxetanes at temperatures of from 0° to 190° C., the nature and proportions of the reactants being chosen so that the equivalent ratio of the total quantity of isocyanate groups, including the isocyanate groups which may be present in dimerized form, to the quantity of sulphonic acid groups is greater than 1 and the equivalent ratio of oxirane and/or oxetane groups to sulphonic acid groups is from 0.1:1 to 10:1.

10. In the production of oligomeric or polymeric polyaddition products comprising reacting organic polyisocyanates with active hydrogen containing materials, the improvement wherein said polyisocyanate comprises

(a) from about 4 to about 48%, by weight, of isocyanate groups, which may be partly in dimerized form;
(b) from about 0.3 to about 38%, by weight, of groups of the formula $—SO_2—O—$ forming part of an aryl sulphonic acid alkyl ester group;
(c) from 0 to about 36%, by weight, of SO_3H groups;
(d) from 0 to about 25%, by weight, of urethane groups —NH—CO—O—; and
(e) from 0 to about 28%, by weight, of allophanate groups



the groups mentioned under (d) and (e) together amounting to from at least 0.4%, by weight, to not more than 28%, by weight, and the groups mentioned under (b) and (c) together amounting to not more than 38%, by weight.

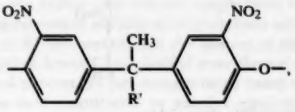
4,201,853

POLYMERIC BINDERS OF NITRATED PHENOLS AND POLYISOCYANATES WHICH REVERSIBLY DISSOCIATE AT ELEVATED TEMPERATURES

Ronald A. Henry, China Lake, and Eugene C. Martin, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 18, 1978, Ser. No. 907,067
Int. Cl.[2] C08G *18/06, 18/28*
U.S. Cl. 528—85 **6 Claims**

1. The polymers having the structure: $(A\text{-}B)_y$ wherein y is a positive integer, wherein the linkages between A and B are formed by the reaction of hydroxy groups and isocyanate groups, wherein A is selected from the group consisting of:



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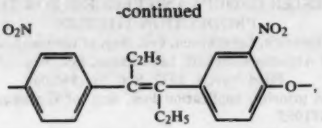
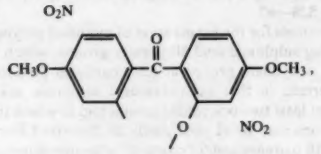
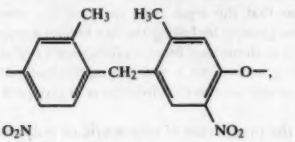
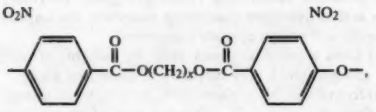
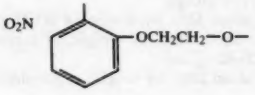


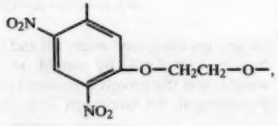




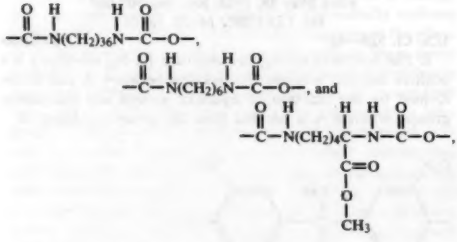




and



with R' being selected from the group consisting of CH_3, C_2H_5, n-C_4H_9, n-C_5H_{11}, n-C_6H_{13}, and n-C_7H_{15}, and x being a positive integer selected from 6 and 10 and wherein B is selected from the group consisting of:



said polymers being reversibly dissociable.

4,201,854

CURABLE EPOXIDE RESIN MIXTURES

Helmut Zondler, Bottmingen, and Hans Lehmann, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,488

Claims priority, application Switzerland, Oct. 20, 1977, 12792/77

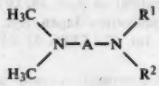
Int. Cl.[2] C08G *59/50, 59/54*

U.S. Cl. 528—121 **14 Claims**

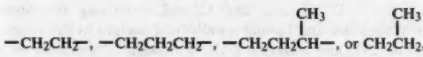
1. A curable mixture comprising:

(a) a polyepoxide compound having an average of more than one epoxide group per molecule; and

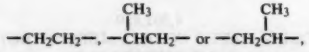
(b) a curing agent of the formula



wherein A is



R^1 is hydrogen, acyl or a group of the formula A'CN or $A'CH_2NH_2$ where A' is



or together with R^2 is alkylidene, alkenylidene, cycloalkylidene or cycloalkenylidene,

R^2 is a saturated or olefinically unsaturated aliphatic radical, a saturated or olefinically unsaturated cycloaliphatic radical or said aliphatic or cycloaliphatic radical substituted with an aryl group, or a group of the formula A'CN or $A'CH_2CN$.

4,201,855

NOVEL POLYESTERS AND PREPARATION THEREOF BY INTERFACIAL CONDENSATION OF BIFUNCTIONAL ACID HALIDES OR ANHYDRIDES WITH BISPHENOLS

Leon Segal, Randolph, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 17, 1977, Ser. No. 807,755

Int. Cl.[2] C08G *63/18*

U.S. Cl. 528—125 **24 Claims**

1. A process for preparing polyesters comprising condensing a halide or anhydride of an aromatic dicarboxylic acid dissolved in an alkyl halide and/or aromatic hydrocarbon with a bisphenol dissolved in a mixture of an alkaline hydroxide and a polyhydroxy derivative of a liquid aliphatic hydrocarbon, ether or amine.

4,201,856

LIQUID CRYSTAL COPOLYESTERS CONTAINING TEREPHTHALIC ACID, 2,6-NAPHTHALENEDICARBOXYLIC ACID, HYDROQUINONE AND RESORCINOL

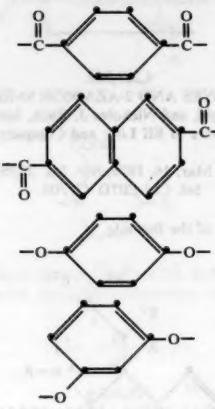
Winston J. Jackson, Jr., and John C. Morris, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 8, 1978, Ser. No. 903,437

Int. Cl.[2] C08G *63/18*

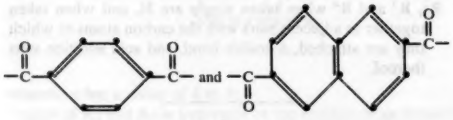
U.S. Cl. 528—190 **2 Claims**

1. A copolyester having a fiber-forming molecular weight consisting essentially of the following divalent radicals:

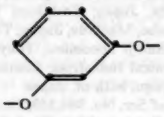


wherein the range of

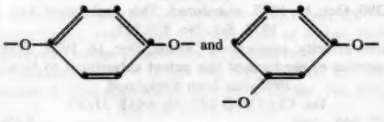
is from 20 to 50 mole percent, based on the total moles of



combined, and the range of



is from 20 to 50 mole percent, based on the total moles of



combined.

4,201,857

NOVEL CONDENSATION PRODUCTS HAVING HIGH ACTIVITY TO INSOLUBILIZE PROTEINS AND PROTEIN-INSOLUBILIZED PRODUCTS

Victor Krasnobajew, Zollikerberg, and Regula Boeniger, Greifensee, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Continuation-in-part of Ser. No. 440,438, Feb. 7, 1974, abandoned, and a continuation-in-part of Ser. No. 571,187, Apr. 24, 1975, abandoned, which is a division of Ser. No. 440,438,. This application Aug. 19, 1975, Ser. No. 605,965

Claims priority, application Switzerland, Feb. 22, 1973, 2603/73

Int. Cl.[2] C08G *12/08*

U.S. Cl. 525—398 **2 Claims**

1. A process for the preparation of a condensation product, which process comprises reacting 1,3-phenylene-diamine with glutardialdehyde to form a product insoluble in water and inert, water-immiscible organic solvents, and diazotizing said product.

4,201,858

METHOD OF PREPARING POLYACETAL CARBOXYLATES

Marvin M. Crutchfield, St. Louis, and Charles J. Upton, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 926,683, Jul. 21, 1978, which is a continuation of Ser. No. 844,566, Nov. 21, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 967,922

Int. Cl.[2] C08G *2/14, 2/36*

U.S. Cl. 528—232 **15 Claims**

1. A method which comprises bringing together under polymerization conditions, an ester of glyoxylic acid and a polymerization initiator that will stabilize one end of up to 100 percent of the chains in the resulting polymer against rapid depolymerization in alkaline solution.

4,201,859

RANDOM COPOLYESTER ADHESIVE RESINS

Maya Agarwal, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 26, 1979, Ser. No. 23,871

Int. Cl.[2] C08L *63/18*

U.S. Cl. 528—302 **6 Claims**

1. As a composition of matter a linear random copolyester having an intrinsic viscosity ranging from 0.5 to 1.0 deciliters per gram as determined in a 60/40 by volume mixed solvent system of phenol and tetrachloroethane at 30° C. and suitable for use as a solution adhesive, said copolyester being the polymeric reaction product of a mixture of reactants consisting of

(a) ethylene glycol

(b) terephthalic acid or a lower C_1–C_4 dialkyl ester thereof

(c) phthalic acid or phthalic anhydride

(d) an aliphatic dicarboxylic acid selected from the group consisting of unsubstituted and lower alkyl substituted aliphatic dicarboxylic acids containing from 5 to 12 carbon atoms in the linear chain or lower C_1–C_4 dialkyl ester thereof

in which mixture the amount of terephthalic acid or lower C_1–C_4 dialkyl ester thereof ranges from 5 to 55 mol percent, the amount of phthalic acid or phthalic anhydride ranges from 5 to 40 mol percent and the amount of aliphatic dicarboxylic acid or lower C_1–C_4 dialkyl ester thereof ranges from 5 to 65 mol percent, all percentages being based on the total mols of the acid constituents or reactive equivalents thereof in said mixture.

4,201,860

PURINE DERIVATIVES

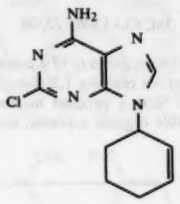
Takayuki Naito, Kawasaki; Susumu Nakagawa, Tokyo; Tetsuro Yamasaki; Taka-aki Okita, both of Ichikawa, and Haruhiro Yamashita, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 904,146, May 9, 1978. This application Jan. 4, 1979, Ser. No. 859

Int. Cl.[2] C07D *473/32*

U.S. Cl. 544—277 **2 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof.

4,201,861

ACYL DERIVATIVES OF C-076 COMPOUNDS

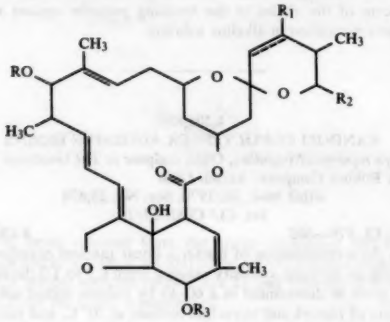
Helmut H. Mrozik, Matawan; Michael H. Fisher, Bridgewater, and Peter Kulsa, Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 839,099, Oct. 3, 1977, abandoned. This application Apr. 17, 1978, Ser. No. 896,947

Int. Cl.[2] C07H *17/08*; C07D *493/22, 491/22*

U.S. Cl. 536—17 A **16 Claims**

1. A compound having the formula:



wherein the broken line indicates a single or a double bond;

R_1 is hydroxy or acyloxy and is present only when the broken line indicates a single bond;

R_2 is iso-propyl or sec-butyl;

R_3 is hydrogen, methyl or acyl; and

R is hydrogen, acyl, α-L-oleandrosyl, 4'-acyl-α-L-oleandrosyl, 4'-(α-L-oleandrosyl)-α-L-oleandrosyl, 4''-acyl-4'-(α-L-oleandrosyl)-α-L-oleandrosyl;

provided that at least one of the R, R_1 or R_3 groups contains an acyl group, and further that said acyl and the acyl portion of said acyloxy group is selected from loweralkanoyl; substituted loweralkanoyl wherein the substituents are halogen, carboxy, loweralkoxycarbonyl, amino, mono- or di-loweralkylamino, or loweralkanoylamino; unsaturated loweralkanoyl, loweralkoxycarbonyl, halogenated loweralkoxycarbonyl, benzoyl, or substituted benzoyl in which the substituents are halogen, nitro, alkyl, amino, hydroxy or alkoxy; carbamoyl, and N-substituted and N,N-disubstituted carbamoyl wherein the substitution is loweralkyl, benzyl, hydroxyloweralkyl or the carbamoyl nitrogen may be incorporated into a morpholine heterocycle.

4,201,862

2-AZAERGOLINES AND 2-AZA-8(OR 9)-ERGOLENES

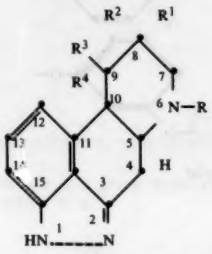
Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 16, 1979, Ser. No. 21,055

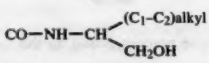
Int. Cl.[2] C07D *471/06*

U.S. Cl. 546—67 **5 Claims**

1. A compound of the formula



wherein R is H, methyl, ethyl and n-propyl, R^1 is $COO(C_1$-$C_3)$alkyl,



or CH_2X wherein X is SCH_3, SO_2CH_3, OCH_3, Cl, Br, OH, CN, $OSO_2(C_1$-$C_3)$-alkyl, O-tosyl or OSO_2phenyl;

R^2, R^3 and R^4 when taken singly are H, and when taken together as adjacent pairs with the carbon atoms to which they are attached, a double bond, and acid addition salts thereof.

4,201,863

N^2-ARYLSULFONYL-L-ARGININAMIDES AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Shosuke Okamoto, 15-18, Asahigaoka 3-chome, Tarumi-ku, Kobe-shi, Hyogo, Japan; Akiko Hijikata, Kobe, Japan; Ryoji Kikumoto, Machida, Japan; Yoshikuni Tamao, Yokohama, Japan; Kazuo Ohkubo, Machida, Japan; Tohru Tezuka, Yokohama, Japan, and Shinji Tonomura, Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo and Shosuke Okamoto, Hyogo, both of, Japan

Continuation-in-part of Ser. No. 844,188, Oct. 21, 1977, Pat. No. 4,117,127, which is a division of Ser. No. 760,745, Jan. 19, 1977, Pat. No. 4,066,773, which is a continuation-in-part of Ser. No. 653,217, Jan. 28, 1976, Pat. No. 4,055,651, Ser. No. 713,486, Aug. 11, 1976, Pat. No. 4,073,914, Ser. No. 671,436, Mar. 29, 1976, Pat. No. 4,066,758, Ser. No. 703,704, Jul. 8, 1976, Pat. No. 4,069,323, said Ser. No. 671,436, is a division of Ser. No. 622,390, Oct. 14, 1975, abandoned. This application Aug. 31, 1978, Ser. No. 938,711

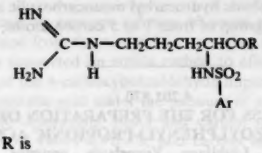
Claims priority, application Canada, Dec. 16, 1977, 293199

The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.

Int. Cl.[2] C07D *215/36*; A61K *31/47*

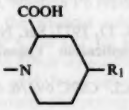
U.S. Cl. 546—166 **8 Claims**

1. An N^2-arylsulfonyl-L-argininamide of the formula (I):



(I)

wherein R is



wherein R_1 is hydrogen or C_1–C_5 alkyl; and Ar is 1,2,3,4-tetrahydro-8-quinolyl optionally substituted with at least one C_1–C_3 alkyl.

4,201,864

OXY-ALKYLAMINO ACIDS AND ESTERS

Frederick Cassidy, Harlow, and Gordon Wootton, Sawbridgeworth, both of England, assignors to Beecham Group Limited, Great Britain

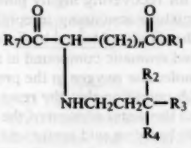
Division of Ser. No. 732,726, Oct. 15, 1976, Pat. No. 4,138,407. This application Nov. 22, 1978, Ser. No. 962,875

Claims priority, application United Kingdom, Oct. 25, 1975, 43990/75; May 22, 1976, 21278/76

Int. Cl.[2] C07C *101/20*

U.S. Cl. 560—39 **12 Claims**

1. A compound of the formula:



wherein n has a value of 4 to 8;

each of R_1 and R_7 is hydrogen or the residue of an alcohol R_1OH or R_7OH containing 1 to 12 carbon atoms;

R_2 when taken independently of R_4 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_3 is hydroxy, acyloxy of 1 to 4 carbon atoms or benzyloxy;

R_4 when taken independently of R_2 is alkyl of 1 to 6 carbon atoms substituted with cycloalkyl of 5 to 8 carbon atoms, phenyl or naphthyl; cycloalkyl of 5 to 8 carbon atoms; phenyl; or naphthyl; any of said phenyl or naphthyl groups being unsubstituted or substituted with halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or nitro; or

R_2 and R_4 together with the carbon atom to which they are attached are cycloalkylidene of 5 to 8 carbon atoms.

4,201,865

NOVEL PROSTAGLANDIN ANALOGUES

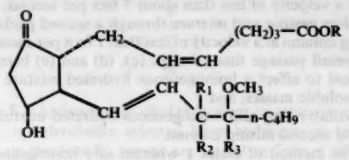
Umberto Guzzi, and Romeo Ciabatti, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 649,176, Jan. 15, 1976, abandoned. This application Feb. 10, 1978, Ser. No. 876,607

Int. Cl.[2] C07C *177/10*

U.S. Cl. 560—121 **3 Claims**

1. Compounds of formula



wherein R is an alkyl group having from 1 to 4 carbon atoms, R_1 is hydrogen, R_2 is hydroxy or R_1 and R_2 taken together represent a group oxo, R_3 is hydrogen or methyl.

4,201,866

O-HEMI-SUCCINATE OF PROPRANOLOL

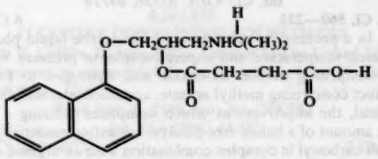
Jun Hasegawa, Clinton, N.Y., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 759,947, Jan. 17, 1977, abandoned. This application Dec. 12, 1977, Ser. No. 859,628

Int. Cl.[2] C07C *69/40*

U.S. Cl. 560—194 **1 Claim**

1. A compound of the formula



and its pharmaceutically acceptable salts.

4,201,867

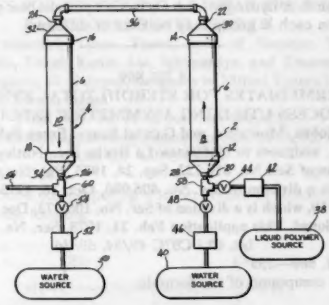
LIQUID POLYMER HYDRATION

Kenneth E. Gasper, Overland Park, Kans., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 16, 1978, Ser. No. 961,310

Int. Cl.[2] C07C *69/54, 103/133*

U.S. Cl. 560—205 **3 Claims**



1. A method of hydrating liquid polymers comprising:

(a) feeding a liquid polymer to the inlet of a first packed mixing column via a first metering means and a first check valve;

(b) feeding water simultaneously to said inlet via a second metering means and a second check valve, the weight ratio of water to liquid polymer being fed being greater than about 100:1;

(c) passing said mixture through said first packed mixing column at a velocity of less than about 1 foot per second;

(d) then passing said mixture through a reducing passageway at a velocity of less than about 7 feet per second;
(e) then passing said mixture through a second packed mixing column at a velocity of less than 1 foot per second, said overall passage time of steps (c), (d) and (e) being sufficient to effect a homogeneous hydrated mixture free of insoluble masses; and
(f) withdrawing said homogeneous hydrated mixture from said second mixing column.

2. The method of claim 1 wherein said homogeneous hydrated mixture is further diluted from about 1 to about 10 times with additional water after step (f).

3. The method of claim 1 wherein said liquid polymer is selected from the group consisting of polyacrylamides, polyquaternaryamides, cationic-modified polyacrylamides, anionic-modified polyacrylamides and polyacrylates.

4,201,868

REACTION OF METHANOL WITH SYNTHESIS GAS

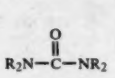
William E. Slinkard, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 611,117, Sep. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 555,646, Mar. 5, 1975, abandoned. This application Feb. 25, 1977, Ser. No. 772,368

Int. Cl.[2] C07C *67/36, 69/14*

U.S. Cl. 560—232 **6 Claims**

1. In a process for reacting methanol in the liquid phase at elevated temperature and superatmospheric pressure with a gas comprising carbon monoxide and hydrogen to form a product comprising methyl acetate, acetaldehyde, and dimethylacetal, the improvement which comprises utilizing a catalytic amount of a halide-free catalyst consisting essentially of a cobalt carbonyl in complex combination with an organic nitrogen ligand of from one to 25 carbon atoms having no ethylenic or acetylenic unsaturation and no elements other than carbon, nitrogen, oxygen, and hydrogen, said ligand containing in its molecule from 1 to 5 Lewis base nitrogen atoms which are present as urea, tertiary amino or nitrilo nitrogen atoms, said ligand being, when said nitrogen atoms are urea nitrogens, a urea of the formula



wherein R is hydrogen or a C_1 to C_9 hydrocarbon group and wherein each R group may be alike or different.

4,201,869

INTERMEDIATES FOR STEROID TOTAL SYNTHESIS PROCESS UTILIZING ASYMMETRIC INDUCTION

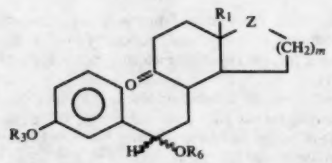
Noal Cohen, Montclair, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 616,222, Sep. 24, 1975, Pat. No. 4,092,483, which is a division of Ser. No. 406,980, Oct. 16, 1973, Pat. No. 3,932,519, which is a division of Ser. No. 100,372, Dec. 21, 1970, abandoned. This application Feb. 21, 1978, Ser. No. 879,328

Int. Cl.[2] C07C *49/84, 69/16*

U.S. Cl. 560—255 **3 Claims**

1. A compound of the formula:



where R_3 is a cycloalkyl group or a primary alkyl group of from 1 to 8 carbon atoms; R_6 is hydrogen or lower acyl derived from a lower aliphatic hydrocarbyl monocarboxylic acid; R_1 is a primary alkyl group of from 1 to 5 carbon atoms; Z is carbonyl and m is 1 or 2.

4,201,870

PROCESS FOR THE PREPARATION OF 2-(3-BENZOYLPHENYL)-PROPIONIC ACID

Boris Zupancic, Ljubljana, Yugoslavia, assignor to LEK Tovarna Farmacevtskih in Kemicnih Izdelkov, n.sol.o., Ljubljana, Yugoslavia

Filed Oct. 17, 1977, Ser. No. 842,824

Claims priority, application Yugoslavia, Oct. 18, 1976, 2548/76

Int. Cl.[2] C07C *69/76, 65/20*

U.S. Cl. 562—460 **10 Claims**

1. A process for the preparation of 2-(3-benzoylphenyl)-propionic acid or salt thereof, characterized in that 3-benzoylphenyl acetonitrile or an alkoxide thereof comprising 1 to 4 carbon atoms in the alkoxy moiety is reacted with a methylating agent in a two-phase system, at a gradually increasing temperature within the range of $-5°$ to $+30°$ C. and in the presence of a quaternary ammonium compound, whereupon the mixture is hydrolized to thereby provide said acid.

4,201,871

PROCESS FOR RECOVERING TEREPHTHALIC ACID

Masatoshi Tanouchi; Hiroshi Takeuchi; Kazuki Ban, and Yoshiyuki Asahina, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 22, 1979, Ser. No. 14,216

Claims priority, application Japan, Feb. 23, 1978, 53-20225; May 27, 1978, 53-63474; Dec. 26, 1978, 53-159274

Int. Cl.[2] C07C *51/42*

U.S. Cl. 562—486 **23 Claims**

1. In a process for recovering highly pure terephthalic acid from a reaction mixture containing terephthalic acid crystals suspended in mother liquor obtained by liquid-phase oxidation of a para-substituted aromatic compound in an acetic acid with a gas containing molecular oxygen in the presence of oxidizing catalyst under such condition that the reaction temperature is 100° to 250° C. and the water content of the reaction system is 2 to 15% by weight based on said acetic acid, the improvement which comprises, without cooling and without subjecting to solid-liquid separation, feeding said hot reaction mixture suspension to a single tower, wherein the suspension is brought into continuous countercurrent contact with acetic acid containing water ascending at a linear velocity of 0.005 to 5 cm/second at a temperature not lower than the oxidation temperature by more than 10° C., the average residence time of terephthalic acid crystals in the tower being 30 seconds or more, thereby to replace the mother liquor of the suspension with said acetic acid containing water recovering said mother liquor as the overflow effluent from the tower, while discharging as the underflow effluent the resulting suspension of terephthalic acid crystals in substantially pure acetic acid and separating highly pure terephthalic acid crystals from the suspension.

4,201,872

PROCESS FOR PREPARING PURIFIED TEREPHTHALIC ACID

Tsuneo Kimura, and Hiroshi Hashizume, both of Kita-Kyushu, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Aug. 12, 1976, Ser. No. 713,825

Claims priority, application Japan, Aug. 26, 1975, 50/103230

Int. Cl.[2] C07C *51/42*

U.S. Cl. 562—487 **10 Claims**

1. A process for purifying terephthalic acid which is obtained by liquid phase oxidation of p-dialkylbenzene in water at

high temperature under high pressure, which consists essentially of:

contacting an aqueous solution of crude terephthalic acid obtained from the oxidation step with a catalyst of palladium supported on active carbon to effect decarbonylation of the 4-carboxybenzaldehyde impurity in the crude terephthalic acid under the pressure of an ambient atmosphere comprising steam and carbon monoxide in the range of $Po \leqq P \leqq Po+5$, said carbon monoxide present being only derived by the decarbonylation of said 4-carboxybenzaldehyde, wherein Po represents the vapor pressure (kg/cm^2) of the aqueous solution at the reaction temperature of 200° C. to 320° C.; and

cooling the solution to effect separation by crystallization of pure terephthalic acid from solution thereby leaving water soluble impurities comprising benzoic acid formed by said decarbonylation in said solution.

4,201,873

9-DEOXY-9,10-DIDEHYDRO-PGD$_2$ ANALOGS

David C. Peterson, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Sep. 17, 1975, Ser. No. 614,244
Int. Cl.^{2} C07C *177/00*
U.S. Cl. 562—503 **1 Claim**

1. 9-Deoxy-9,10-didehydro-PGD$_2$.

4,201,874

3-ISOPROPENYL-6-HEPTENOIC ACID

Richard J. Anderson, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 886,324, Mar. 13, 1978. This application Nov. 24, 1978, Ser. No. 963,548
Int. Cl.^{2} C07C *57/02*
U.S. Cl. 562—598 **2 Claims**

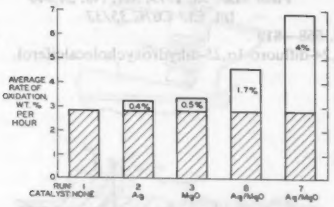
1. The compound, 3-isopropenyl-6-heptenoic acid.

4,201,875

CATALYST AND PROCESS FOR PRODUCING HYDROPEROXIDES

Yulin Wu; Marvin M. Johnson, and Gerhard P. Nowack, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 1, 1978, Ser. No. 930,077
Int. Cl.^{2} C07C *179/02*
U.S. Cl. 568—575 **26 Claims**



1. A process for producing an organic hydroperoxide comprising reacting an organic compound having at least one carbon-hydrogen bond capable of being oxidized to a hydroperoxide-carbon bond with oxygen in the presence of a catalyst comprising metallic silver or silver-gold alloy supported on an inorganic support selected from the group consisting of at least one of the oxides and carbonates of metals of Groups IIa, IIb, IIIb, and IVb wherein said organic compound is selected from the group consisting of (1) hydrogenated polymers of conjugated diolefins and (2) organic compounds having 3 to 50 carbon atoms and the general formula

wherein R is hydrogen, an alkyl radical, or an aromatic radical, each R′ is individually selected from hydrogen or an alkyl radical, or the two R′ groups are joined to form a saturated hydrocarbyl ring, and wherein said reaction is carried out at a temperature in the range of about 25° C. to about 200° C.

15. A process for the production of cyclohexylbenzene hydroperoxide comprising contacting cyclohexylbenzene in the liquid phase with a gas containing free oxygen in the presence of a catalyzing amount of a catalyst comprising metallic silver or silver-gold alloy supported on an inorganic support selected from the group consisting of at least one of the oxides and carbonates of metals of Groups IIa, IIb, IIIb, and IVb, wherein said contacting is carried out under reaction conditions such that cyclohexylbenzene hydroperoxide is produced, said reaction conditions including a temperature in the range of about 25° C. to about 200° C. and a pressure of about 0 to about 1000 psig.

4,201,876

FLUORINE CONTAINING POLYETHERS

Warren R. Griffin, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 8, 1976, Ser. No. 748,582
Int. Cl.^{2} C07C *43/02*
U.S. Cl. 568—677 **3 Claims**

1. A process for preparing a fluorine-containing polyether which comprises the steps of:

a. reacting perfluoroglutaryl chloride with 1,5-hexafluoropentane diol in the presence of a catalytic amount of dimethylformamide so as to obtain a fluorinated polyester; and

b. reacting the fluorinated polyester with sulfur tetrafluoride in the presence of hydrogen fluoride, thereby obtaining a fluorine-containing polyether product.

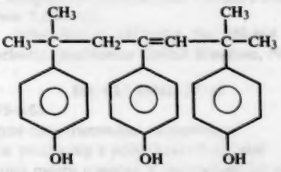
4,201,877

PROCESS FOR PRODUCING A LINEAR TRIMER OF PARAISOPROPENYL PHENOL

Noboru Yamazaki; Teruo Yuasa, both of Nagoya; Yoshio Morimoto, Tokai; Kunio Aoi, Ichinomiya, and Tsutomu Takase, Nagoya, all of Japan, assignors to Mitsui Toatsu Chemicals Inc., Tokyo, Japan

Filed Nov. 16, 1978, Ser. No. 961,451
Claims priority, application Japan, Nov. 26, 1977, 52/141126
Int. Cl.^{2} C07C *37/00*
U.S. Cl. 568—720 **10 Claims**

1. A process for preparing a linear trimer of p-isopropenyl phenol of the formula



which comprises reacting at least one compound selected from the group consisting of p-isopropenyl phenol and linear polymers of p-isopropenyl phenol in the presence of an acid catalyst in an organic solvent.

4,201,878

PROCESS FOR PRODUCING BISPHENOLS

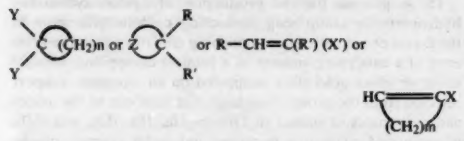
Victor Mark, Evansville; Lawrence C. Mitchell, and Charles V. Hedges, both of Mt. Vernon, all of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 10, 1978, Ser. No. 876,703

Int. Cl.[2] C07C *37/00, 39/16*

U.S. Cl. 568—723 **7 Claims**

1. A process for the production of bisphenols which comprises reacting a phenol having a reactive hydrogen para to the phenolic hydroxyl and a compound of the formula



wherein R and R' are hydrogen, lower alkyl or aryl; X is lower alkoxy or the same as X'; Y is chlorine or the same as X; X' is aryloxy; n is integer from three to nine; m is (n-1), or a mixture of such compounds, in the presence of an acidic condensing agent.

4,201,879

HYDROQUINONES

Richard Barner, Witterswil, and Max Schmid, Brugg, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

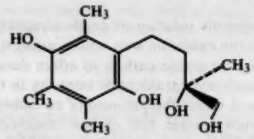
Division of Ser. No. 905,361, May 12, 1978. This application Dec. 15, 1978, Ser. No. 970,043

Claims priority, application Luxembourg, May 16, 1977, 77344

Int. Cl.[2] C07C *39/08*

U.S. Cl. 568—766 **1 Claim**

1. A compound of the formula:



IIIa

4,201,880

PREPARATION OF ORTHO-ALKYLATED PHENOLS

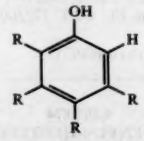
Bernardus J. van Sorge, Selkirk, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 651,251, Jan. 22, 1976, Pat. No. 4,097,411. This application Feb. 21, 1978, Ser. No. 879,768

Int. Cl.[2] C07C *37/12, 39/06*

U.S. Cl. 568—804 **10 Claims**

1. In a process for alkylating a phenol in the ortho position which comprises the vapor phase reaction in the presence of an alkylation catalyst of an alkyl alcohol and a phenol having the general formula



where R is a monovalent substituent selected from the group consisting of hydrogen, lower alkyl, phenyl, and lower alkyl substituted phenyl; the improvement comprising performing the reaction at a temperature of about about 460° C. in the presence of a molded to shape catalyst comprising a mixture of a magnesium oxide bonded with a minor amount of silica, the catalyst having a surface area of at least 20 square meters per gram and containing from about 1 to about 15% by weight of silica.

4,201,881

24,24-DIFLUORO-1α,25-DIHYDROXYCHOLECALCIFEROL

Hector F. DeLuca; Heinrich K. Schnoes, both of Madison, Wis.; Nobuo Ikekawa, Tokyo, Japan; Yoko Tanaka, Madison, Wis., and Yoshiro Kobayashi, Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Mar. 28, 1979, Ser. No. 24,848

Int. Cl.[2] C07C *35/32*

U.S. Cl. 568—819 **4 Claims**

1. 24,24-difluoro-1α,25-dihydroxycholecalciferol.

4,201,882

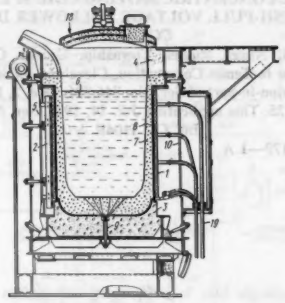
INDUCTION MELTING FURNACE

Daniil M. Kolotilo, ulitsa Akademika Dobrokhotova, 10, kv. 12, Kiev; Viktor V. Fursov, prospekt Pobedy, 39, kv. 19, Sevastopol; Anatoly A. Cherevaty, ulitsa Nadezhdintsev, 20, kv. 32, Sevastopol; Nikolai D. Mazovsky, prospekt Pobedy, 23, kv. 236, Sevastopol; Leonid M. Goncharov, ulitsa Letchikov, 87, kv. 44, Sevastopol, and Larisa D. Apatova, ulitsa Akademika Dobrokhotova, 4, kv. 25, Kiev, all of U.S.S.R.

Filed May 5, 1978, Ser. No. 903,779

Int. Cl.[2] H05B *5/00*

U.S. Cl. 13—27 6 Claims



1. An induction melting furnace comprising: a crucible for a molten metal; an inductor disposed around said crucible and inducing alternating magnetic field required to melt said metal; a heat-resistant current-conducting screen interposed between said inductor and crucible and enveloping the entire exterior surface of said crucible, said screen being formed by a substantially solid wall from a carbon material with a thickness thereof of not more than 1.5 mm, said screen preventing molten metal from reaching said inductor upon any destruction of the crucible lining; and circuit means connected to said screen for signalling predetermined wear of the crucible lining.

4,201,883

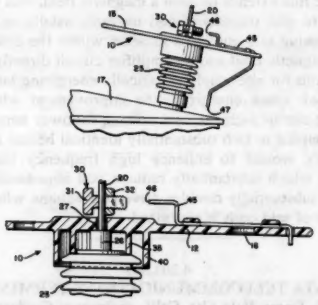
GUARD FOR A HIGH VOLTAGE ELECTRICAL TERMINAL BUSHING

William E. Shepherd, 309 Drake Ave., New Carlisle, Ohio 45344

Filed Nov. 3, 1977, Ser. No. 848,265

Int. Cl.[2] H01B *17/00, 17/46*

U.S. Cl. 174—139 10 Claims



1. A guard for an electrical bushing of the type which is mounted so as to extend outwardly from a member at ground potential and which has a terminal at its upper end for connecting a high voltage cable, said guard being adapted for installation on the upper surface of the bushing and being of a size and shape sufficient to prevent small animals from simultaneously contacting the high voltage cable and the grounded member when installed on the upper surface of the bushing, said guard comprising:

an isolating member of electrically insulating material having means forming an opening in the center thereof for coaxial alignment with the bushing,

said isolating member having a generally planar portion having upper and lower surfaces and having a minimum radial dimension large enough to prevent small animals from simultaneously contacting the high voltage cable and the member at ground potential when the isolating member is installed on the upper surface of the bushing,

means for securng said isolating member onto the bushing, and

means extending from the lower surface of said planar portion having a diameter sufficient to surround the bushing for providing shielding for the high voltage cable and its connection to said bushing from beneath said isolating member when the isolating member is installed on the upper surface of the bushing,

said generally planar portion of said isolating member being substantially larger in diameter than the diameter of said means extending from the lower surface thereof.

6. A guard for an electrical bushing of the type which is mounted so as to extend outwardly from a member at ground potential and which has a terminal at its upper end for connecting a high voltage cable, said guard being adapted for installation on the upper surface of the bushing and being of a size and shape sufficient to prevent small animals from simultaneously contacting the high voltage cable and the grounded member when installed on the upper surface of the bushing, said guard comprising:

an isolating member of electrically insulating material having means forming an opening in the center thereof for coaxial alignment with the bushing,

said isolating member having a generally planar portion having upper and lower surfaces and having a minimum radial dimension large enough to prevent small animals from simultaneously contacting the high voltage cable and the member at ground potential when the isolating member is installed on the upper surface of the bushing,

means for securing said isolating member onto the bushing, and

lightning arrestor means including an electrically conductive wire attached to said isolating member having one end positioned in spaced relationship to the upper surface of said planar portion for placement in close proximity to but spaced from said high voltage cable, and the other end positioned below the lower surface of said planar portion for placement in close proximity to but spaced from the member at ground potential.

4,201,884

DIGITAL DATA TRANSMISSION SYSTEM

Philip R. Couch, Roanoke, Va., and David A. Philpott, Leeds, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 7, 1977, Ser. No. 848,964

Claims priority, application United Kingdom, Nov. 16, 1976, 47673/76

Int. Cl.[2] H04L *27/18*

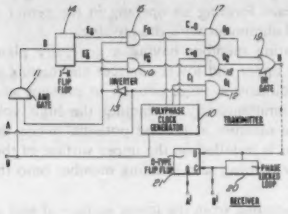
U.S. Cl. 375—53 6 Claims

3. A digital data transmitter comprising:

means for producing a polyphase clock, and

logic gating means coupled to said means for producing for gating digital data input signals with said polyphase clock to provide a transmission signal, one data state of said input signals being gated with one clock phase of said polyphase clock, said one clock phase being time coinci-

dent with a reference time, and the other data state of said input signals being alternately gated with other clock



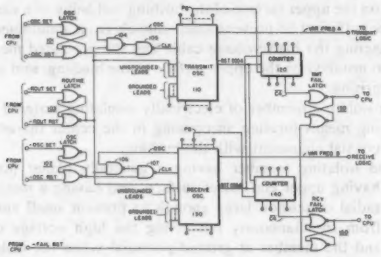
phases of said polyphase clock, said other clock phases being equally distributed in time about said reference time.

4,201,885

ROUTINABLE CLOCK CIRCUIT

James J. Vrba, Berwyn, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 26, 1978, Ser. No. 955,280
Int. Cl.[2] H04L *7/00*; G06F *15/16*
U.S. Cl. 375—106 **6 Claims**



1. A routinable clock circuit for use in an automatic number identification system connecting a private automatic branch exchange to a switching center including a central processing unit, said routinable clock circuit including a transmit portion and a receive portion, each of said portions of said routinable clock circuit comprising:

gating means connected to said central processing unit of said switching center;

oscillator means connected to said gating means and operated in response to said gating means to produce periodic pulses of a predetermined frequency;

counting means, said counting means of said transmit portion connected to said oscillator means of said transmit portion and to said oscillator means of said receive portion and said counting means of said receive portion connected to said oscillator means of said receive portion and to said oscillator means of said transmit portion, said counting means of said transmit portion operated in response to a predetermined number of said periodic pulses received from said oscillator means of said transmit portion, to produce an output pulse and said counting means of said receive portion operated in response to a predetermined number of said periodic pulses received from said oscillator means of said receive portion, to produce an output pulse;

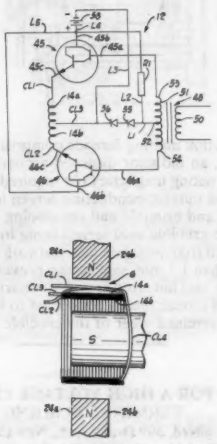
output latching means conncted between said counter means and said central processing unit, said output latching means of said receive portion operated in response to said output pulse produced by said counter means of said receive portion to generate a continuous output signal corresponding to said receive portion output pulse, whereby said output signal is detected by said central processing unit to indicate a fault condition present in said receive portion of said routinable clock circuit, and said output latching means of said transmit portion operated in response to said output pulse produced by said counter means of said transmit portion to generate a continuous output signal corresponding to said transmit portion output pulse, whereby said output signal is detected by said central processing unit to indicate a fault condition present in said transmit portion of said routinable clock circuit.

4,201,886

PLURAL CONCENTRIC MOVING COIL SPEAKER WITH PUSH-PULL VOLTAGE FOLLOWER DIRECT COUPLING

Martin J. Nagel, Russell Township, Geauga County, Ohio, assignor to Tenna Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 746,796, Dec. 2, 1976, Pat. No. 4,130,725. This application Jul. 14, 1978, Ser. No. 924,638
Int. Cl.[2] H04R *3/00*
U.S. Cl. 179—1 A **5 Claims**



1. In a power amplifier and transducer unit comprising a transducer, a magnet assembly defining a gap across which a magnetic flux extends to form a magnetic field, two wire coils secured to said transducer and movable axially in said gap, means biasing said coils to a location within the extent of the useful magnetic field and an amplifier circuit directly coupled to said coils for alternately electrically energizing said coils to move each when energized, the improvement wherein the amplifier circuit includes two voltage follower amplifiers directly coupled to two substantially identical helical coils concentrically wound to enhance high frequency transformer coupling which substantially reduces coil impedance by one-half and substantially doubles drive coil volume when one or the other of said coils is energized.

4,201,887

DATA TELECOMMUNICATIONS TERMINAL

Chester A. Burns, Palo Alto, Calif., assignor to Cordura Marketing, Inc., Chicago, Ill.

Filed May 11, 1978, Ser. No. 904,983
Int. Cl.[2] H04M *11/00*
U.S. Cl. 179—2 DP **42 Claims**

1. A data telecommunications terminal for use with a telephone system comprising:

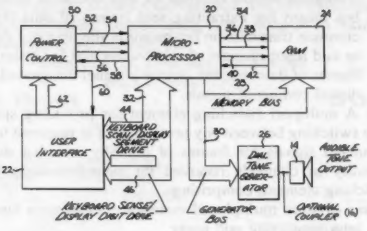
(i) memory means for semi-permanently storing data;

(ii) signal generator means for generating signals corresponding to said data;

(iii) signal coupling means coupled to said signal generator for coupling said signals to said telephone system;

(iv) a keyboard having a first group of switches for inputting data, a second group of switches for directing the storage of said data, and at least one switch for directing the generation of signals corresponding to said data;

(v) a microprocessor coupled to said memory means, said signal generator means and said keyboard for controlling, under the direction of said keyboard, the receipt of said data from said keyboard, the storage of said data by said



memory means, the generation of said signals by said generator means, and the supply of voltage within said terminal, whereby said data is entered into said memory means from said keyboard and said data is coupled to said telephone system from said memory means, and;

(vi) self-contained power control means coupled to said memory means, said keyboard and said microprocessor for providing voltage substantially only during actuation of said switches, said power control means activated upon actuation of any one of said switches and automatically deactivated by a command from said microprocessor upon completion of processing by said terminal.

4,201,888

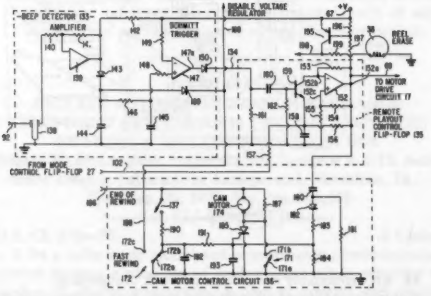
REMOTE PLAYOUT TELEPHONE ANSWERING DEVICE

Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406

Division of Ser. No. 879,279, Feb. 21, 1978. This application Sep. 11, 1978, Ser. No. 941,282

Int. Cl.[2] H04N *1/65*

U.S. Cl. 179—6 E **6 Claims**



6. In a telephone answering device of the type wherein a prerecorded outgoing announcement is transmitted to the telephone line during an announcement transmit portion of the answering cycle and a message incoming from the telephone line is recorded on a tape during a subsequent incoming message record portion of the answering cycle, and wherein recorded incoming messages are played out over the telephone line under remote control in response to receipt of a beep tone from said telephone line, the improvement comprising:

a flip-flop set to a first state at the beginning of a telephone answering cycle, said first state enabling normal telephone answering operation by said device,

a beep detector connected to set said flip-flop to a second state in response to detection of a first beep tone received from said telephone line and to reset said flip-flop back to said first state in response to detection of a second beep tone from said telephone line,

a loop motor to drive a magnetic tape loop containing said announcement and a reel motor to drive said incoming message record tape,

a motor drive circuit to provide power only to said reel motor and not to said loop motor when said flip-flop is in said second state,

a cam mechanism including a cam and a cam drive motor for driving said cam, said reel motor being positionable by said cam alternatively to a forward position in which said reel motor drives said message record tape in a forward direction and to a rewind position in which said reel motor rewinds said tape,

a cam motor control circuit connected to said flip-flop so as to be activated when said flip-flop is set to said second state, said control circuit when actuated first causing said cam drive motor to drive said cam so as to position said reel motor to said rewind position, said control circuit thereafter, when rewind is completed, causing said cam drive motor to drive said cam so as to position said reel motor to said forward position so that recorded incoming messages will be played out to said telephone line,

first inhibit means for preventing said flip-flop from being set to said second state in response to detection of a first beep tone received during said incoming message record portion of the answering cycle, and

second inhibit means, connected to said cam motor control circuit, for preventing said flip-flop from being reset to said first state upon receipt of a second beep tone while said reel motor is positioned to said rewind position.

4,201,889

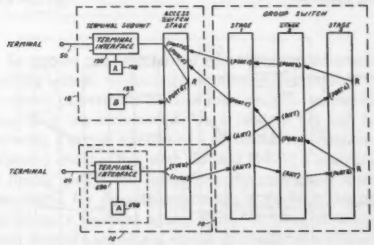
DISTRIBUTED CONTROL DIGITAL SWITCHING SYSTEM

Alan J. Lawrence, Stamford; John M. Cotton, East Norwalk; Kenneth J. Hamer-Hodges, Newtown, and Jeffrey N. Denenberg, Stamford, all of Conn., assignors to International Telephone and Telegraph, New York, N.Y.

Filed Mar. 17, 1978, Ser. No. 888,251

Int. Cl.[2] H04Q *11/04*

U.S. Cl. 320—68 **22 Claims**



1. A distributed control digital communication system for selectively interconnecting a plurality of groups of terminals thru a digital switching network having an access switching stage and one or more other switching stages, comprising:

a first group of data processing means for providing a first set of pooled processing functions for said groups of terminals, each of said processing means being associated with one of said groups of terminals;

a second group of data processing means for providing a second set of pooled processing functions for one or more of said groups of terminals such that said second processing functions are provided independently of the processing functions provided by said first group of processing means; and

digital switching network means coupled to said first and second groups of processing means by one or more multiplexed transmission paths over which data and at least path selection control signals are transmitted in frames containing a plurality of channels of said data, such that said path selection control signals establish communication over said multiplexed transmission paths thru said digital switching network means between said first and second groups of data processing means with said path selection control signals preceding said data on said multiplexed transmission paths in the same channels and selectively interconnect said terminals over transmission paths thru said switching network in channels designated by said path selection control signals.

15. A distributed control digital communication system comprising a plurality of terminal units for interfacing a plurality of PCM communication terminals carrying digitized speech in frames containing a plurality of channels of said digitized speech to a common communications path upon which said frames and in-channel path selection control signals are multiplexed, and comprising:

means for deriving at least digital path selection control signals for each PCM terminal interfaced thereto;

a digital switching network coupled to said communications path for bit asynchronously interconnecting said PCM terminals through paths established thru said switching network in response to said in-channel path selection control signals, and;

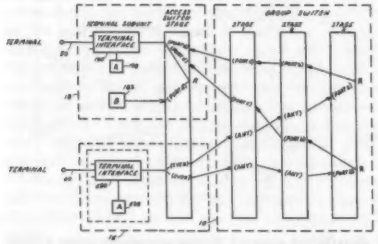
means at each of said terminal units for selectively multiplexing said digitized speech and said in-channel path selection control signals on said common communications path such that said digital path selection control signals precede said digitized speech in channels designated by said path selection control signals on said common communications path.

4,201,890

MULTIPORT DIGITAL SWITCHING ELEMENT

Alan J. Lawrence; Jeffrey N. Denenberg, both of Stamford; Murray Rubinstein, Trumbull, and Daniel C. Upp, Easton, all of Conn., assignors to International Telephone and Telegraph, New York, N.Y.

Filed Mar. 17, 1978, Ser. No. 888,582
Int. Cl.[2] H04J 3/06; H04Q 11/04
U.S. Cl. 370—68 **18 Claims**



1. A multiport switching element for providing and maintaining time and space switching for digitally encoded data received phase asynchronously in frames containing a plurality of channels of said data, said element coupling any of said channels at the input of the port receiving said channel to any channel at the output of any port in said element in response to digital command signals received by said port for said channel and in said channel, comprising:

time division multiplexed common transmission bus means interconnecting said ports for providing a plurality of time slots, each time slot being dedicated to a particular channel of said frames coupled to the input of each port;

means at each port responsive to said digital command signals for coupling said command signals and subsequent frames of data received in the channel in which said digital command signals are received to said common transmission bus means in the time slot dedicated to said channel; and

means at each port selectively responsive to said digital command signals coupled to said common transmission bus means for extracting said frames of data from said common transmission bus means in the time slot dedicated to said input channel of said frames and for inserting said frames of data into the output channel designated by said digital command signals.

7. A multiport switching element for providing space and time switching between any ports thereof in response to digital command signals for frames of digitally encoded data in a plurality of channels received bit asynchronously by said switching element, comprising:

time division multiplexed common transmission bus means interconnecting said ports;

means at each port responsive to said command signals in said channels for coupling said data in said channels bit-synchronously from any of said ports to said common transmission bus; and

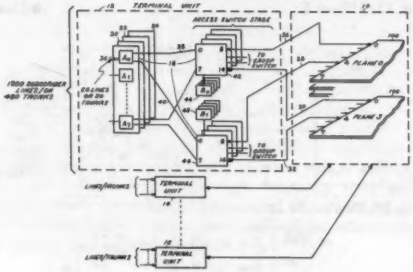
means at each port selectively responsive to said command signals for extracting said data from said transmission bus in the bus cycle for said channel and for serially transmitting said extracted data bit-synchronously in the output channel designated by said digital command signals from said port.

4,201,891

EXPANDABLE DIGITAL SWITCHING NETWORK

Alan J. Lawrence, Stamford; John M. Cotton, East Norwalk, and Jeffrey N. Denenberg, Stamford, all of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 17, 1978, Ser. No. 888,607
Int. Cl.[2] H04Q 11/04
U.S. Cl. 370—58 **16 Claims**



15. An expandable switching network comprising:

a plurality of stages of multiport switching elements operable within said network as single sided or multisided, each port of each switching element including means for adapting said port for operation as an inlet or as an outlet and each of said switching elements including means to selectively reflect phase asynchronously received frames of digitally encoded traffic in a plurality of channels entering any inlet of any port of said switching element back to any

inlet of any port of said switching element and to phase synchronously interconnect any outlet port of said switching element to any outlet port of said switching element; and

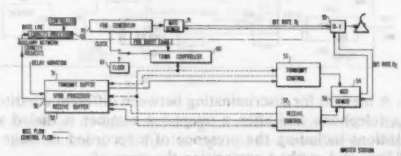
means for selecting the inlets and outlets of each port of each of said switching elements for single sided or multisided operation within said network such that said inlet and outlet ports either selectively couple traffic through said switching element to a switching element in a higher numbered stage of said network or fold said traffic into the network by reflecting from a higher numbered stage to a lower numbered stage of said network.

4,201,892

MULTI-RATE TDMA COMMUNICATION SYSTEM

William G. Schmidt, Gaithersburg, Md., assignor to Satellite Business Systems, Mclean, Va.

Filed Jun. 27, 1978, Ser. No. 919,518
Int. Cl.[2] H04J *3/06*
U.S. Cl. 370—104 **12 Claims**



1. A communication system comprising plural, geographically separate stations communicating with each other in a TDMA mode through a quasi-stationary repeater in earth orbit, comprising:

means at one of said stations for periodically transmitting to said repeater a frame reference burst modulated at a first predetermined bit rate for defining a baseline frame, means at each of a first group of said stations for receiving said frame reference burst from said repeater, means at each of said first group of stations for transmitting to said repeater at said first predetermined bit rate in first mutually exclusive time periods referenced to said frame reference burst at said repeater,

means for periodically transmitting a sub-frame reference burst at a second predetermined bit rate, different from said first predetermined bit rate to said repeater, means at each of a second group of said stations for receiving said sub-frame reference burst from said repeater, and means at each of said second group of stations for transmitting in second mutually exclusive time periods referenced to said sub-frame reference burst at said repeater, each of said second time periods exclusive of said first time periods.

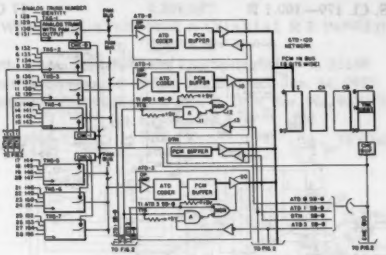
4,201,893

PRIVATE AUTOMATIC BRANCH EXCHANGE TELEPHONE SYSTEM WITH TWO DATA SOURCES SHARING A MULTIPLEXED DATA BUS

Donald W. McLaughlin, Naperville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sep. 28, 1978, Ser. No. 946,699
Int. Cl.[2] H04Q *11/04*
U.S. Cl. 370—58 **5 Claims**

1. In a pulse code modulated time division communication system having: a plurality of analog terminals, a plurality of analog to digital convertors, a central control and timing means for controlling the assignment of said plurality of analog terminals to said analog to digital convertors and a common bus, each of said convertors including a buffer store having an output to said common bus for connection to an information memory for subsequent switching to an outgoing time channel; a plurality of digital channels and an arrangement for connecting said digital channels in place of certain of said analog terminals, each said digital channel also includes a buffer store having an output connection to said common bus, and comprising a plurality of first gating means each connected between said output of each said convertors buffer store and said common bus, a plurality of second gating means connected between said outputs of each said digital channels buffer store and said common bus, and a digital trunk control connected to each said gating means operated to block said first gating means during the time assigned said particular replaced analog terminal and enabling said second gating means of said corresponding digital channel.

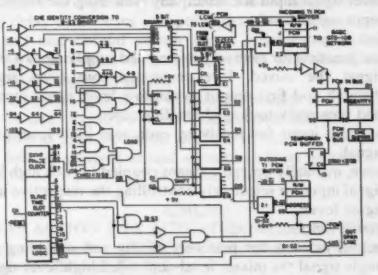


4,201,894

ARRANGEMENT FOR CONVERSION OF RANDOM TO FIXED DATA CHANNEL FORMAT

Donald W. McLaughlin, Naperville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sep. 28, 1978, Ser. No. 946,891
Int. Cl.[2] H04Q *11/04*
U.S. Cl. 370—58 **5 Claims**



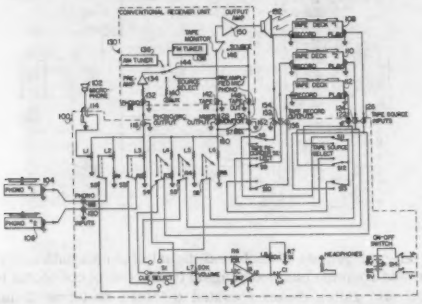
1. In a pulse code modulated time division communications switching system, wherein the number of terminations exceeds the number of available channel links and the channel links are allocated to the terminations on a random per call basis by generating a digital address of a particular termination during an allotted channel link time slot and having a central control and timing means for controlling the operations thereof; an arrangement for directly interfacing a T1 PCM carrier span comprising: a receiver means operative for generating at the output thereof a sequential stream of 24 channels of digital data in response to receipt of data from said carrier span; first buffer means for temporarily storing said digital data for each of said 24 channels; decoder means operated in response to said central control means to receive said digital address and producing at the output thereof a second address corresponding to one of said 24 channels of said first buffer means; and read out means responsive to said decoder means output for causing the reading out of said buffer of the corresponding channel data.

4,201,895

PASSIVE AUDIO SIGNAL MIXING APPARATUS

Harold W. Hill, Jr., 512 Portland Ave., Pleasantville, N.J. 08232

Filed Jul. 15, 1977, Ser. No. 816,079
Int. Cl.[2] G11B 27/00, 31/00
U.S. Cl. 179—100.1 R 17 Claims



1. Separately-packaged audio signal mixing apparatus for use with a plurality of separately-packaged audio signal sources, at least one said source providing a low level audio signal and at least one source providing a high level audio signal, and for use with a separately-packaged conventional audio amplifier unit having an input coupled to a preamplifier for low level signal, an input for high level signals, an audio output amplifier, a tape monitor signal output, and means for selectively coupling said preamplifier output signal to said tape monitor signal output and for selectively coupling said high level signal input to said output amplifier, the apparatus comprising:

a separate input for receiving each said low level audio signal;

passive, manually operable means coupled to each said low level signal input for selectively controllig the respective input signal level;

a first output;

a first junction for passively mixing and supplying as a single signal the mixed, level-controlled low level signals through said first output to the low level signal input of said separately-packaged amplifier unit;

a separate input for receiving each said high level audio signal;

passive, manually operable means coupled to each high level signal input for selectively controlling the respective input signal level;

a second output;

a second junction for passively mixing and supplying as a single signal the mixed, level-controlled high level signals through said second output to the high level signal input of said separately-packaged amplifier unit;

an input for receiving said mixed, level-controlled, low-level signals in pre-amplified form from said tape monitor output of said separately-packaged amplifier unit; and

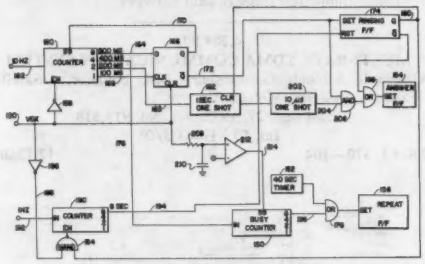
manually operable means for selectively coupling one or both of said pre-amplified signal and said mixed, level-controlled high level signal to said second output, whereby said low level audio source signals may be selectively level controlled and mixed in said separately-packaged mixing apparatus and preamplified in said separately-packaged amplifier unit to a level suitable for passive mixing with said high level audio source signals, said high level audio source signals may be selectively level controlled and mixed in said separately-packaged mixing apparatus, and the preamplified mixture of low level audio source signals may be selectively mixed with the mixture of high level audio source signals in said separately-packaged mixing apparatus and supplied to said audio output amplifier.

4,201,896

TELEPHONE POLLING APPARATUS USING A PLURALITY OF TIMERS TO DETECT THE LINE CONDITIONS

David S. Bower, Sunrise, and Fred J. Smith, Plantation, both of Fla., assignors to Digital Products Corporation, Fort Lauderdale, Fla.

Division of Ser. No. 799,141, May 23, 1977, Pat. No. 4,160,125.
This application Jul. 3, 1978, Ser. No. 921,742
Int. Cl.[2] H04M 3/46
U.S. Cl. 179—18 B 2 Claims



1. A method for discriminating between different conditions on a telephone line after a telephone number is dialed said conditions including the presence of a recorded message on said line, said method comprising the steps of:

detecting the presence of energy on the telephone line;

timing the detection of the energy;

discriminating an answer condition by determining that the energy detection lasts more than a first predetermined interval but less than a second predetermined interval;

descriminating a busy condition by counting the number of times the presence of energy is greater than a third predetermined time which is more than said first predetermined time but less than said second predetermined time, when the count reaches a predetermined value;

discriminating said answer condition when there is no detected energy for a fourth predetermined interval;

discriminating said recorded message condition on the telephone line when there is energy detected for more than a fixed percentage of the time during a fifth predetermined interval; and

discriminating a no answer condition on the telephone line after the passage of a sixth predetermined interval greater than the first, second, third, fourth, and fifth predetermined intervals without the discrimination of any other conditions.

4,201,897

RINGING VOLTAGE TRANSFER CIRCUIT

John P. Dorth, Downers Grove; Robert V. Burns, Tinely Park, and Lloyd A. Tarr, Elmhurst, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 24, 1978, Ser. No. 963,492
Int. Cl.[2] H04Q 9/00
U.S. Cl. 179—84 R 6 Claims

1. A voltage switch for connecting a source of ringing signals to a telephone subscriber station line, for use in a telephone system including a processing unit operated to generate first and second ring control signals, said voltage switch comprising:

switch control means connected to said processing unit initially operated in response to said first ring control signal;

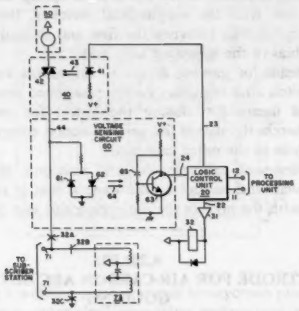
first switching means connected to said switch control means operated to establish a ringing signal circuit path to said subscriber line;

second switching means connected to said switch control means, operated after a predetermined time to connect

said ringing signal circuit path to said source of ringing signals, conducting said ringing signals to said line;

said switch control means further operated in response to said second ring control signal to render said second switch means inoperative and conditioned to render said first switch means inoperative;

voltage sensing means connected between said ringing signal circuit path and said switch control means, operated in



response to said rendering of said second switch means inoperative to still further operate said conditioned switch control means to render said first switch means inoperative;

whereby said ringing signal source is initially connected to and further disconnected from said subscriber station only when ringing signals are not present on said ringing signal circuit path.

4,201,898

INERTIA SWITCHES

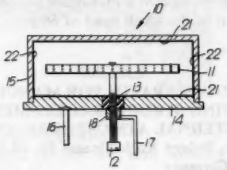
Harry Jones, Ashton-under-Lyne, and David L. Slater, Oldham, both of England, assignors to Ferranti Limited, Hollinwood, England

Filed Jun. 2, 1978, Ser. No. 911,945

Claims priority, application United Kingdom, Jun. 4, 1977, 23840/77

Int. Cl.[2] H01H *35/14*

U.S. Cl. 200—61.45 R **9 Claims**



1. An inertia switch comprising a first part in the form of a resilient element attached at one end thereof to a support member and coiled about said one end substantially in the form of a spiral, the other end being free to move, a casing enclosing said resilient element, one wall of which casing carries the support member, said support being a post extending through said wall and movable along its length by adjustment means to alter the stable position of the resilient element inside the casing, the resilient element and the walls of said casing being electrically conductive so that movement of said free end through a predetermined distance in response to an acceleration force effects switching of an electric circuit by contact between the resilient element and the walls of the casing, the support post being electrically conductive, connecting the resilient element to one terminal of the switch and being electrically insulated from the casing wall, a suitable part of the casing wall being electrically insulated to prevent switching due to acceleration forces acting to displace the resilient element in a specified direction.

4,201,899

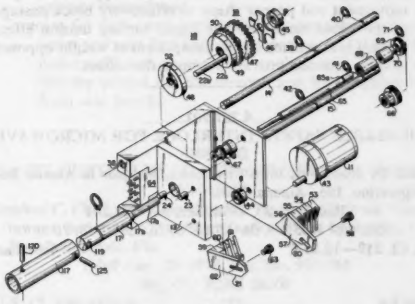
POWER ACTUATOR FOR A COAXIAL R F POWER SWITCH

Kenneth Owen, 6201 Hibbling La., Springfield, Va. 22150

Continuation-in-part of Ser. No. 806,485, Jun. 14, 1977, abandoned. This application Jun. 9, 1978, Ser. No. 913,970

Int. Cl.[2] H01H *3/00*

U.S. Cl. 200—153 R **16 Claims**



1. A power actuator for a coaxial line switch, said actuator comprising:

(a) reversible motor means for intermitently driving and then reversing a coaxial line switch through a predetermined angle of rotation;

(b) reversible auxiliary actuator means driven by said motor means through a second predetermined angle of rotation;

(c) delay cam means interposed between said motor means and said coaxial switch means whereby said auxiliary actuator begins its rotation before said coaxial switch means begins to rotate;

(d) first and second sets of auxiliary switch means engaged by said auxiliary actuator means, with said first set actuated as actuator begins its angle of rotation, and said second set actuated as said actuator ends its rotation.

4,201,900

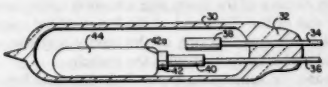
SNAP ACTION TILT ACTUATED MERCURY SWITCH

George B. Marchev, Short Hills, N.J., assignor to Gordos Corporation, Bloomfield, N.J.

Filed Feb. 26, 1979, Ser. No. 15,414

Int. Cl.[2] H01H *29/04*

U.S. Cl. 200—220 **11 Claims**



1. A tilt actuated conductive liquid switch comprising:

an elongated envelope of electrically insulating material sealed off from the atmosphere,

a pair of electrodes each supported on and within the envelope and providing conductive means which extends through the envelope to terminals outside the envelope providing electrical connection to said electrodes, their electrodes and their supporting structure being arranged in a vertical plane during operation to extend from one end side-by-side into the envelope generally in the direc-

tion of elongation, the lower one of said electrodes projecting further into the envelope than the higher one and terminating in a blunt termination, such that in the selected operating orientation the envelope is arranged generally horizontally with the lower electrode projecting furtherest into the envelope beneath the other electrode, and

a mass of cohesive conductive liquid within said envelope, the mass being sufficiently great and the position of the lower electrode being such as to require penetration by the lower electrode as it passes to contact the shorter higher electrode and sufficiently small to clear both electrodes except when tilted with the electrode and lowered, the blunt termination on the lower electrode being of sufficient area in a transverse direction opposed to liquid movement and proper shape to effectively block passage of the liquid mass until the liquid surface tension effect thereof is overcome by the component of weight opposed to it, in order to provide a snap action effect.

4,201,901

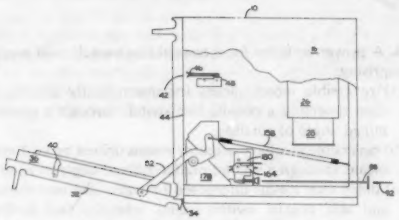
ADJUSTABLE SAFETY INTERLOCK FOR MICROWAVE OVENS

Barton O. Schuchert, Iowa City, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Mar. 20, 1978, Ser. No. 888,201

Int. Cl.[2] H05B *9/06;* **H01H** *3/16;* **E05C** *13/10*

U.S. Cl. 219—10.55 C **4 Claims**



1. A microwave oven apparatus, comprising:

(a) a cavity having walls defining a cooking enclosure and having an access opening;

(b) an outer case disposed about a portion of the cavity;

(c) a door for closing the access opening;

(d) a microwave energy source adapted to radiate energy within the enclosure;

(e) an electrical circuit for energizing the source and controlling the operation of the apparatus;

(f) a switch for interrupting the electrical circuit and de-energizing the microwave energy source;

(g) means for activating the switch upon closure of the door, wherein the activation means comprises a longitudinal member having its forward end connected to the door and a portion of its distal end disposed to contact the switch upon closure of the door, and a tension spring attached at one end of the distal end of the longitudinal member and at the other end to one of the cavity walls to urge the distal end into contact with the switch;

(h) means for supporting the switch disposed between the cavity and the outer case so that relative movement between the swich and the activation means is permitted, wherein the support means comprises a first support bracket mounted on one of the cavity walls, and a second support bracket pivotally attached to the first support bracket on which the switch is mounted in a fixed position;

(i) means for moving the switch relative to the activation means and for securing the switch in a selected position, wherein the movement means comprises:

a first tab formed from the first support bracket and having a hole therein, a second tab formed from the second support bracket and having a hole therein, an adjusting bolt that slides through the holes in the tabs, and means for retaining the bolt in the first tab;

a compression spring having one end pushing against the first tab and the other end pushing against the second tab to bias the switch means away from the activation means, whereby the contacting of the switch with the distal end of the longitudinal member is determined by the combination of the tension spring bias in conjunction with the longitudinal member, the compression spring bias between the first and second tabs, and the bias of the adjusting bolt; and

(j) means for gaining access to the means for moving the switch after the outer case is positioned about the cavity, and means for closing the means for gaining access, wherein the means for gaining access comprises:

a hole in the outer case, and

a first wall extending beyond a second, abutting cavity wall and having a hole therein that is axially aligned with the hole in the outer case and said adjusting bolt.

4,201,902

ELECTRODE FOR AIR-CARBON ARC CUTTING AND GOUGING

Perry J. Rieppel, Worthington, and Raymond A. Sadauskas, Columbus, both of Ohio, assignors to Arcair Company, Lancaster, Ohio

Division of Ser. No. 848,816, Nov. 9, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,650

Int. Cl.[2] B23K *9/23*

U.S. Cl. 219—69 M **2 Claims**

1. A method of lowering the operating noise level at least 20 dbA of the conventional air-carbon arc cutting and gouging process by the steps of:

replacing the conventional copper coated carbon-graphite electrode with a carbon-graphite electrode having a 0.002" to 0.012" of commercially pure aluminum as a coating uniform in thickness to ±0.001"; and

operating said method at a maximum delivered air pressure as measured in the torch head of 60 psi.

4,201,903

METHOD AND APPARATUS FOR MANUFACTURING A LOAD BEARING STRUCTURAL ELEMENT HAVING SPECIAL INTERNAL ATMOSPHERIC CONDITIONS

Otto A. Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Fed. Rep. of Germany

Division of Ser. No. 533,453, Dec. 16, 1974, Pat. No. 4,090,340, which is a continuation-in-part of Ser. No. 502,094, Aug. 30, 1974, abandoned. This application Feb. 21, 1978, Ser. No. 879,739

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1973, 2343792; Dec. 15, 1973, 2362497

Int. Cl.[2] B23K *9/00, 11/00*

U.S. Cl. 219—78.12 **6 Claims**

1. A method for the manufacture of a load-bearing structural element comprising the steps of:

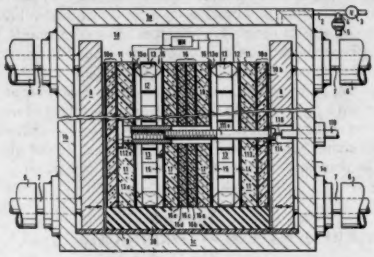
(a) positioning outer structural shell assemblies made at least partially from sound insulating material in a housing in spaced apart arrangement so as to provide a hollow space;

(b) inserting a pair of honeycomb plates in the hollow space between said shell assemblies in spaced relation thereto and spaced from each other;

(c) positioning a central load-bearing support assembly made at least partially from sound insulating material between

said honeycomb plates, with said central support assembly being spaced from said honeycomb plates so as to provide gaps therebetween;

(d) pressing said outer structural shell assemblies inwardly so as to press the edges of said honeycomb plates firmly against the surfaces of both the outer structural shell assemblies and the adjacent surfaces of the central load-bearing support assembly, and



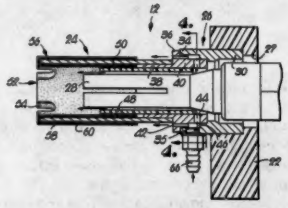
(e) applying a welding current to said honeycomb plates and the adjacent outer shell assemblies and central support assembly so as to rigidly interconnect said honeycomb plates thereto, thereby to provide a load-bearing, flexure-resistant composite building element which is both sound and heat insulating.

4,201,904

AIR COOLED HEAD FOR STUD WELDING GUN

Larry G. Weidman, Prairie Village, Kans., assignor to Geo. P. Reintjes Co., Inc., Kansas City, Mich.

Filed May 22, 1978, Ser. No. 907,919
Int. Cl.[2] B23K *9/20*
U.S. Cl. 219—98 **1 Claim**



1. The invention comprising:

a high amperage electric arc stud welding gun having a tubular stud holder;

an elongated, tubular, metallic relatively permanent ferrule of substantially constant diameter operatively coupled to said gun, one end portion of the ferrule circumscribing the stud holder in radially spaced relationship therefrom, the other, work end portion of the ferrule extending outwardly from the stud holder for engagement with a workpiece, the area of engagement by the operating head with the workpiece being limited to the diameter of said work end portion of the ferrule, and the surrounding said work end being unconfined, whereby studs may be welded on the workpiece in closely spaced relationship, limited only by said diameter of the work end portion of the ferrule;

a tubular insulating sleeve disposed between said one end portion of the ferrule and the stud holder, the sleeve being spaced from the stud holder whereby to define an annular fluid passageway of substantially constant, relatively small cross-sectional dimension between the sleeve and the stud holder to permit delivery of cooling fluid to the interior of the ferrule;

means for delivery of cooling fluid under pressure unidirectionally from said one end portion to said work end portion and generally along the length of said ferrule and proximal both faces of the circular sidewall thereof for cooling of the ferrule and stripping of slag therefrom, including

an annular insert having a body portion circumscribing said sleeve, the insert having a first and second set of passages, said first set of passages being in fluid communication with the relatively small passageway between the sleeve and the stud holder, said second set of passages circumscribing the ferrule in closely spaced relationship thereto for deliverying cooling fluid along the exterior thereof; and

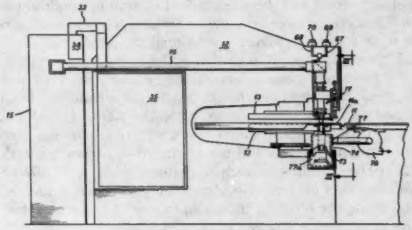
means for delivering cooling fluid under pressure to said insert and said first and second passages, said air being under sufficient pressure for cooling said ferrule and thereby extend the life thereof, and for stripping slag from said ferrule.

4,201,905

LASER CUTTING HEAD ATTACHMENT FOR PUNCH PRESSES

Stephen C. Clark, Williamsville, and Victor T. Carbone, Cheektowaga, both of N.Y., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Aug. 29, 1978, Ser. No. 937,754
Int. Cl.[2] B23K *26/00*
U.S. Cl. 219—121 L **6 Claims**



1. In a machine tool punch press having a main frame, main frame carried upper and lower spaced rotatable turrets respectively carrying punch tools and die tools, a main frame carried vertically reciprocatable punch ram stationed at a work station, a worktable extending outwardly from adjacent the lower turret at least to the sides and front thereof having at least a stationary portion adjacent the lower turret, the stationary portion aligned with the work station and spaced to a side thereof, a central automatic control controlling the turrets and punch ram and further controlling workpiece movement apparatus effective to move a workpiece with respect to at least the stationary portion of the worktable and the work station, the improvement of:

(a) a vertically movable laser cutting head carried by the main frame above the stationary portion of the worktable, the cutting head including a hollow tip assembly adjacent the bottom thereof and a beam focusing optical means adjustably fixably spaced from a bottom of the tip assembly and vertically movable with the cutting head,

(b) a laser beam generator, the laser beam generator being spaced from the machine tool punch press and main frame and being substantially isolated therefrom whereby vibration of the machine tool punch press is isolated from the beam generator,

(c) an optical beam pathway interconnecting the cutting head and the laser beam generator, the pathway including beam bending optics directing a laser beam through the

tip, an opening through the stationary portion of the worktable aligned with the laser beam eminating from the hollow tip,

(d) a control means automatically alternatively controlling punching operation and laser operation from said central automatic control, said control means including means for vertically moving the cutting head in dependent relationship to selection of laser operation, said control means being a portion of said central control.

4,201,906

METHOD AND APPARATUS FOR ARC WELDING

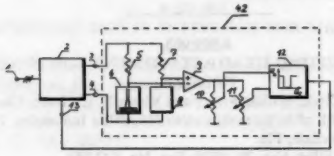
Peter Puschner, Dreiländerweg 127, Vaalserquartier, Gut Fuchstal, 5100 Aachen, Fed. Rep. of Germany

Filed Jun. 23, 1978, Ser. No. 918,362

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2728980

Int. Cl.[2] B23K *9/10*

U.S. Cl. 219—137 PS **10 Claims**



1. A method of arc welding, employing a programmed welding energy source actuatable, in a time interval of about one millisecond or less, between a first operating condition in which the energy source energizes a welding process in accordance with a predetermined operational characteristic and a second operating condition in which the energy source energizes the welding process in accordance with a predetermined requirement characteristic that is distinctively different from the operation characteristic, comprising the steps of:

A. continuously monitoring a given electrical parameter of the welding process and comparing that parameter with the corresponding electrical parameter of a simulated welding process energized from the same energy source;

B. actuating the welding energy source to its second operating condition whenever the comparison of step A indicates that the relation of the compared parameters has departed from a given tolerance range; and

C. actuating the welding energy source back to its first operating condition when the comparison of step A indicates that the relation of the compared parameters has returned to the tolerance range.

4,201,907

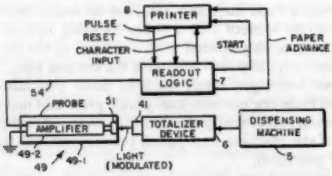
TOTALIZER SYSTEM

David M. Otten, Newton, Mass., assignor to International Totalizing Systems, Inc., Newton, Mass.

Filed Aug. 29, 1977, Ser. No. 828,675

Int. Cl.[2] G06M *3/06*; G07C *3/10*

U.S. Cl. 235—92 AC **9 Claims**



1. A totalizer transmitter for being fixedly coupled to a money operated machine for making sales, said transmitter providing a light output signal while coupled to the machine, said transmitter comprising counter means for counting data representing the number of times the machine makes a sale, a free running clock means for providing a plurality of clock signals, serial transmission means coupled to said counter, the data in said serial transmission means continuously updated from said counter in response to one of said plurality clock signals, said serial transmission means continuously providing a transmitted signal in response to another of said plurality of clock signals, said transmitted signal having an output waveform of data and clock information in a coded form in which each bit of the clock information is in the period of the output waveform and the data is the pulse width of the output waveform, and a light emitting diode coupled to said serial transmission means for transmitting light signals representing the coded output signal, whereby the transmitted signal is read out without the necessity of any external interrogation signal.

4,201,908

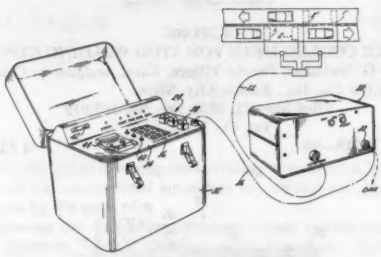
MEASUREMENT AND RECORDING APPARATUS AND SYSTEM

Bernard A. Johnson, Deerfield, and Frederick P. Gardner, Wonder Lake, both of Ill., assignors to Mangood Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 789,416, Apr. 21, 1977, abandoned. This application Apr. 17, 1978, Ser. No. 897,005

Int. Cl.[2] G08G *1/065*; G06F *15/48*

U.S. Cl. 235—92 TC **26 Claims**



1. Apparatus for counting and recording the count of events at a surveillance site comprising, in combination:

a recorder unit adapted to be located at a surveillance site and connected to detector means providing successive detector signals responsive to successive actuations of said detector means by successive events, and

a portable reader instrument separate from and adapted to be connected to said recorder unit,

said recorder unit including semi-conductor memory means having separate locations for storage of data and instructions of a program, means including a programmable data processor connected to and operable under the control of a program of instructions stored in said memory means to function in a recording mode, a time of day clock means connected to supply timing signals on a real time basis to said data processor, said data processor including an arithmetic and logic unit for performing computational and decisional processes in a sequence determined by said program to count said events in response to said detector signals, and to accumulate said count as data in separate locations in said memory means for separate real time periods based upon said timing signals,

said reader instrument having means for connection to said recorder unit, a recording device, and manually operable means for generating read commands and for transmitting said read commands over said connection means to said recorder unit,

said data processor of said recorder unit being operable

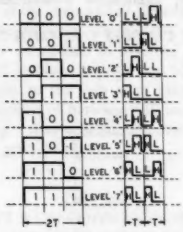
under the control of said program to respond to said read commands and shift from a recording mode to a read mode and transmit count data accumulated in separate locations in said memory means of said recorder unit through said connection means to said reader instrument, said reader instrument including means for operating said recording device to re-record accumulated count data received from said reader unit.

4,201,909

DATA-TRANSMISSION SYSTEM AND METHOD USING FIBER-OPTICAL TRANSMISSION

Renato Dogliotti, and Giancarlo Pirani, both of Turin, Italy, assignors to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Oct. 5, 1978, Ser. No. 948,870
Claims priority, application Italy, Oct. 13, 1977, 69277 A/77
Int. Cl.[2] H04B 9/00
U.S. Cl. 455—608 **9 Claims**



1. A method of conveying data over a fiber-optical transmission path having a transmitting end and a receiving end, comprising the steps of:

generating luminous energy at the transmitting end;

establishing a series of clock cycles of predetermined length T which define successive coding periods of duration 2T;

modulating said luminous energy by changing its intensity in at least one clock cycle T of any coding period 2T from a first to a second amplitude level to generate a distinctive pulse while limiting the width of said distinctive pulse to a maximum of T/2 with maintenance of said first amplitude level in at least one half of each clock cycle;

selecting the number of distinctive pulses and the time position thereof within each coding period in accordance with the digital values of input signals from a multilevel source pursuant to a predetermined modulation code;

transmitting the luminous energy so modulated over the fiber-optical path to the receiving end;

generating at said receiving end a recurrent ramp signal of duration T synchronized with said clock cycles;

deriving from luminous energy arriving at said receiving end, with the aid of said ramp signal, a three-level electrical signal for each clock cycle;

sampling said three-level interval at a rate 1/T; and

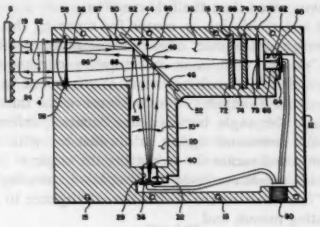
comparing the resulting samples with predetermined thresholds for obtaining therefrom ternary-signal pairs occurring in successive periods 2T and representing the digital values of corresponding input signals.

4,201,910

PHOTOSENSOR ASSEMBLY

James S. Copeland, and Raymond Primm, both of Roswell, N. Mex., assignors to Innovation Industries, Inc., Roswell, N. Mex.

Filed Mar. 27, 1978, Ser. No. 890,066
Int. Cl.[2] H01J 3/14
U.S. Cl. 250—216 **8 Claims**



1. A photosensor assembly comprising

means defining a first passage,

means defining a second passage which intersects said first passage,

a light source disposed to direct light from said second passage to the intersection of said second passage with said first passage,

a lens disposed at one end of said first passage,

beam splitter means disposed in said first passage at the intersection of said second passage with said first passage, said beam splitter means including a plate having an opening therein, one side of said plate having a reflective surface for reflecting towards said lens light received from said light source,

means disposed at the other end of said first passage for detecting light which shall have passed through said lens and the opening in said plate,

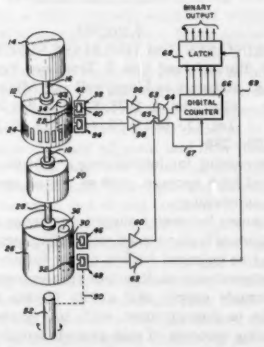
said lens being positioned relative to said beam splitter means to focus and direct light received from outside said first passage through the opening in said plate to said detecting means.

4,201,911

SHAFT ANGLE DIGITIZER

Charles R. Dering, Northridge, Calif., assignor to Richard M. Glueck, Chappaqua, N.Y.

Filed Mar. 15, 1978, Ser. No. 886,667
Int. Cl.[2] G01D 5/38
U.S. Cl. 250—231 SE **9 Claims**



5. An analog-to-digital encoder comprising:

a first rotating member having "fine" reference intelligence thereon;

a first pick-up means for scanning the "fine" reference intelligence and providing a "fine" reference signal;

a second rotating member mechanically connected to the first rotating member having "coarse" reference and transfer command intelligence thereon;

a speed reducer mechanically connected to the first member and to the second member to rotate the second member at a lower speed than the first member;

second and third pick-up means for scanning the "coarse" reference and transfer command intelligence and providing "coarse" reference and transfer command signals where the third pick-up means is connected to a means responsive to angular rotation to move the third pick-up to vary the angle between the "coarse" reference and transfer command signals in accordance with the shaft position and means for measuring the angle;

a counting means connected to the pick-up means providing the "fine" and coarse" reference intelligence to reset the counting means; and

a storage means connected to the counting means responsive to the transfer command signal to provide an output corresponding to the angular position of the input shaft.

4,201,912

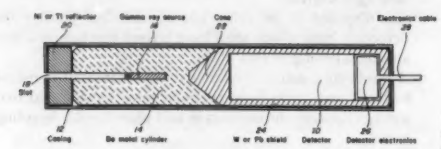
SUBTHRESHOLD NEUTRON INTERROGATOR FOR DETECTION OF RADIOACTIVE MATERIALS

Michael L. Evans; Howard O. Menlove, and Michael P. Baker, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 3, 1978, Ser. No. 948,266

Int. Cl.[2] G01V *5/00*

U.S. Cl. 250—253 **28 Claims**



1. An interrogation device for detecting the presence of fissionable material comprising:

interrogation means for producing a continuous source of photoneutrons at energy levels below 500 keV;

means for continuously detecting induced fast neutrons produced by interrogated fissionable material at energy levels above 500 keV.

4,201,913

SAMPLING SYSTEM FOR MASS SPECTROMETER

William W. Bursack, and Erik T. Tromborg, both of Minneapolis, Minn., assignors to Honeywell Inc, Minneapolis, Minn.

Filed Oct. 6, 1978, Ser. No. 949,295

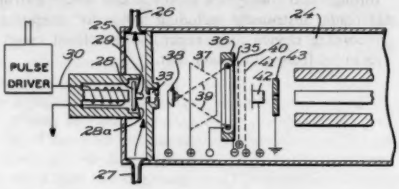
Int. Cl.[2] B01D *59/44;* **H01J** *39/34*

U.S. Cl. 250—288 **4 Claims**

1. An apparatus for introducing a gaseous sample into an enclosure of high vacuum, such as a mass spectrometer, said apparatus comprising:

sealing means between a supply of gaseous sample and said enclosure of high vacuum said sealing means further comprising an enlarged hollow cavity forming an antechamber between said enclosure of high vacuum and said gaseous sample supply said cavity having a first opening therein in comunication with said gaseous sample for admitting amounts of said gaseous sample into said antechamber and a second opening in said antechamber in communication with said enclosure of high vacuum allowing the passage of said sample into said enclosure of high vacuum;

closure means for closing said first opening; and



means for operating said closure means such that pulses of said gaseous sample are admitted to said antechamber of a predetermined duration and frequency in such a manner to provide a substantially steady state flow condition into said enclosure of high vacuum.

4,201,914

ELECTRICAL INSTRUMENT TO DETECT THE PRESENCE OF LIQUID AND METHOD OF OPERATING THE SAME

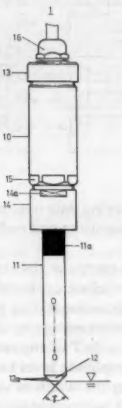
Benno Perren, Austrasse 33, 5430 Wettingen, Switzerland

Filed Feb. 27, 1978, Ser. No. 881,799

Claims priority, application Switzerland, Mar. 7, 1977, 2788/77

Int. Cl.[2] G01J *1/00;* **G01N** *21/26*

U.S. Cl. 250—341 **22 Claims**



1. In an electrooptical instrument to detect the presence of liquid, containing at least a monochromatic infrared source, a light conductor having an optical axis and which totally reflects infrared radiation from at least one surface thereof, an infrared detector, and signal processing circuitry, the improvement which comprises:

the infrared source has a maximum radiation strength of less than 200 mW/sterad;

the main maximum in the angular distribution of the infrared radiation is at least approximately axiallysymmetric and oriented in the direction of the optical axis of the light conductor;

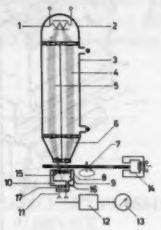
the angular distribution of the infrared radiation is such that the intensity falls off to half its maximum value less than 4° away from the symmetry axis; and

a resistor is connected in series with said infrared detector.

4,201,915
PNEUMATIC INFRARED RADIATION DETECTOR HAVING A HERMETICALLY SEALED CHAMBER AND A WINDOW

Günter Schunk, and Albert Randow, both of Bruchköbel, Fed. Rep. of Germany, assignors to Leybold-Hereaus GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,617
Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720636
Int. Cl.[2] G01J 1/00
U.S. Cl. 250—343 4 Claims

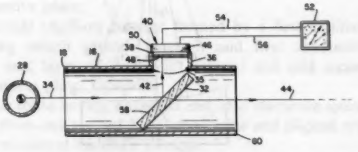


1. In a pneumatic infrared radiation detector for intermittent irradiation with infrared light, of the type having a hermetically sealed chamber including a metal cup having a highly reflective inner surface forming the back of the chamber and having a flange-like rim at the open end thereof and a radiation admitting window at the open end of the cup and a flow detector connected to the chamber, wherein the improvement comprises: the window composed of material selected from the group consisting of calcium fluoride and barium fluoride and sealed vacuum tight to the cup with glass solder having a coefficient of expansion of between 110 and 150.10^{-7}/K and the cup comprising a thin-walled noble metal vessel, wherein the noble metal is gold or silver.

4,201,916
ULTRAVIOLET RADIATION SENSOR FOR USE IN LIQUID PURIFICATION SYSTEM

Sidney Ellner, R.F.D. #2, Bedford, N.Y. 10506

Filed Mar. 20, 1978, Ser. No. 888,179
Int. Cl.[2] G01J 1/42; G01N 21/26, 21/00
U.S. Cl. 250—372 8 Claims



1. For use in an ultraviolet purification system in which liquid flowing through a housing is exposed to ultraviolet radiation emitted by a light source within said housing,

an ultraviolet radiation sensor comprising a hollow support tube having a first open end and a second open end, and adapted to be mounted on a wall of said housing with said open end in direct communication with said light source whereby to receive an incident radiation beam from said light source,

beamsplitting means disposed within said mounting tube at an intermediate location between said first end and said second end, said beamsplitting means being adapted to reflect ultraviolet radiation and transmit visible radiation and being located in line with the axis of said beam entering said support tube through said first end,

ultraviolet radiation detection means mounted on said support tube in a position offset from the axis of said beam,

said beam splitting means being positioned to reflect the ultraviolet radiation of said beam in a direction angular to the axis of said beam and toward said offset detection means, and to transmit the visible radiation of said beam through said support tube and out through the open second end thereof, and

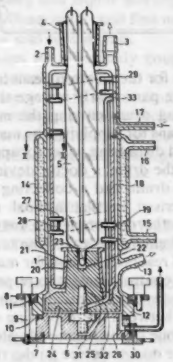
electrical meter means connected to said ultraviolet radiation detection means and adapted to monitor ultraviolet radiation detected by said ultraviolet radiation detection means,

said ultraviolet detection means comprising a glass plate, a phosphor layer deposited on said glass plate with said phosphor layer adapted for emission of visible radiation responsive to incident ultraviolet radiation, photocell means disposed adjacent to said glass plate and adapted for receipt of said visible radiation emitted by said phosphor layer, and electrical connection means connecting said photocell and said electrical meter means.

4,201,917
APPARATUS FOR IRRADIATION OF FLUIDS

Alfred Graentzel, Durmersheimer Str. 98, Karlsruhe, Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 924,002
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733344
Int. Cl.[2] G01N 21/24
U.S. Cl. 250—431 7 Claims



1. Apparatus for the irradiation of fluids to cause a chemical reaction therein, said apparatus comprising: an axially symmetrical container having its axis disposed during operation in a vertical position; a rotor centrally supported within said container for rotation therein, said rotor being spaced from the inner surface of the container so as to form a flow path of annular cross-section for receiving the fluid to be irradiated and having wiping elements adapted to remove any deposits from the inner surface of said container, said container having a fluid inlet at its upper end; and a fluid outlet at its lower end; a radiation source disposed adjacent said flow path; shielding means arranged at the inlet end portion of said container between said source and said flow path and extending downwardly from the upper end of said container a predetermined distance for shielding the fluid in said flow path from irradiation by said source; gas discharge outlets at the opposite axial ends of said container, and a gas inlet arranged at the lower end of said shielding means for the admission of a carrier gas providing for upward and downward gas flow zones within said container from said gas inlet to said gas outlets, the upper gas outlet serving to discharge gases containing carbon of inorganic origin driven out of the fluid in the shielded section of

said flow path and the lower gas outlet serving to discharge gases containing carbon of organic origin generated by irradiation of the fluid in an unshielded section of said flow path at the lower end of said container so as to permit distinct measurement of organic compounds in the fluid.

4,201,918

APPARATUS FOR THE ELECTRON BEAM IRRADIATION OF A FLOWABLE MATERIAL, MORE PARTICULARLY SEWAGE SLUDGE

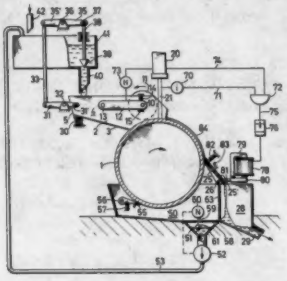
Beda Latzer, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 27, 1978, Ser. No. 900,622

Claims priority, application Switzerland, May 4, 1977, 5556/77

Int. Cl.² G01N *23/00*

U.S. Cl. 250—433 **20 Claims**



1. An apparatus for the electron beam irradiation of a flowable material, more particularly sewage sludge, the apparatus having a conveying drum moving the material through the electron beam, means for supplying the material to the drum, a resiliently mounted dispensing roller for spreading the material in a thin layer on the drum, a doctor device for removing the material from the drum, and a collecting tank for irradiated material, characterised in that a final control element is adapted to adjust the doctor device between a position in which the material enters the collecting tank and a position in which the material reaches a trough for material to be recirculated; and the final control element so responds to signals from an electron beam intensity pickoff and from a pickoff responding to the distance between the dispensing roller and the drum that when at least one of the measured values departs from its tolerance range, the doctor device guides the material into the trough.

4,201,919

X-RAY FILM LOADER

Gunter Schmidt, Malibu, Calif., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 805,817, Jun. 13, 1977, abandoned. This application Jan. 23, 1979, Ser. No. 5,720

Int. Cl.² G03B *41/16*

U.S. Cl. 250—468 **10 Claims**

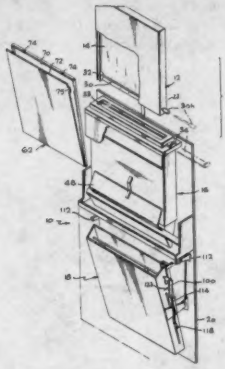
1. Apparatus for receiving a lighttight envelope containing a stack of film sheets and for loading one film sheet at a time into a cassette, comprising:

a lighttight dispenser housing having upper and lower walls provided with openings;

a lighttight receiver housing mounted on and having an exit at its lower end for discharging said stack of films to the dispenser housing;

means at the upper end of said receiver housing for holding one end of the said envelope, and means at the lower end of said receiver housing for clamping the opposite end of the envelope, said clamping means being releasable from outside said receiver housing to allow the film stack to fall down through said lower end of the receiver housing to the dispenser housing;

means in said dispenser housing for passing only one film sheet at a time, to fall through said lower end of said dispenser housing; and



a lighttight cassette-holding housing disposed under said dispenser housing for holding a cassette in an open position under the lower end of said dispenser housing portion, and including cassette closing means for closing the cassette while it lies in said cassette-holding housing.

4,201,920

APPARATUS FOR IRRADIATING A TARGET ON TWO OPPOSITE FACES BY MEANS OF AN ACCELERATED CHARGED PARTICLE BEAM

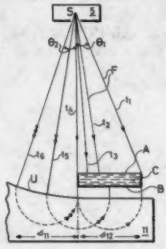
Dominique Tronc, and Claude Levaillant, both of Buc, France, assignors to C.G.R. MeV, Buc, France

Filed Jun. 27, 1978, Ser. No. 919,551

Claims priority, application France, Jul. 1, 1977, 77 20376

Int. Cl.² H01J *37/00*

U.S. Cl. 250—492 B **11 Claims**



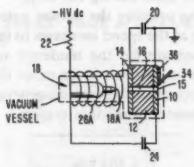
1. A two-face irradiation apparatus for irradiating, by means of a charged particle beam, a target having at least two opposite faces A and B, said apparatus comprising a charged particle accelerator, a microwave generator supplying a microwave signal, means for injecting this microwave signal into said accelerating structure, means for obtaining a scanning beam of a predetermined amplitude corresponding to a scanning angle θ from said beam of accelerated particles moving in a vacuum-tight scanning chamber, said target being disposed over part of the path followed by the scanning beam corresponding to a scanning angle θ_1 in such a way that the scanning beam of angle θ_1 impinges on said face A of said target; a magnetic deflection system provided with two pole pieces delimiting an air gap disposed downstream of said target, these pole pieces, which are arranged parallel to the scanning plane, having a

length at least equal to said amplitude of said scanning beam on a level with said pole pieces, said scanning chamber being provided with at least one opening for positioning said target on the portion of said scanning beam corresponding to a scanning angle θ_1, said opening being provided with at least one vacuum-tight window which is transparent to said scanning beam, the portion of the beam corresponding to a scanning angle $\theta_2=\theta-\theta_1$ and which is not intercepted by said target, entering said air gap of the pole pieces and being reflected to impinge on said opposite face B, said pole pieces having a face, so-called useful face, facing said opposite face B, said useful face comprising several sections having different curvatures for obtaining a reflected beam substantially perpendicular to said opposite face B.

4,201,921
ELECTRON BEAM-CAPILLARY PLASMA FLASH X-RAY DEVICE

Richard A. McCorkle, South Salem, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,238
Int. Cl.² H05B 31/22
U.S. Cl. 250—493 **14 Claims**



1. An x-ray device for employment in a vacuum chamber comprising:

a first plate of a conductive material;

an intermediate layer of an insulating material attached to said first conductive plate;

a second plate of a conductive material attached to said intermediate layer and electrically isolated from said first conductive plate;

a cylindrical capillary passage formed by a first capillary opening which extends through said first conductive plate, said layer of insulating material and said second conducting plate;

a first electrode having a tapered end, said electrode spaced apart from said second conducting plate and aligned with said cylindrical capillary passage;

means for supplying ions to said cylindrical capillary passage;

first means for storing capacitive energy so that said second plate is maintained at a potential with respect to said first plate;

second means for storing capacitive energy so that said first electrode is maintained at a potential with respect to said first plate;

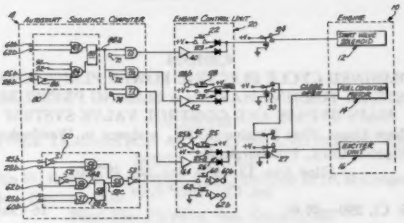
means for electrically connecting said first electrode and said second conducting plate allowing passage of a current to equalize the potential between said second conductive plate and said first electrode; and

means for triggering a discharge between said first conductive plate and said second conductive plate, where an ionized plasma is established in said cylindrical capillary passage and said electrode discharges an electron beam into said plasma causing the generation of x-rays.

4,201,922
AUTOMATIC START/MANUAL START INTERLOCK SYSTEM FOR A GAS TURBINE ENGINE

Orva H. Douglas, and Quinciano G. Mendoza, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 750,301, Dec. 13, 1976, abandoned.
This application Jun. 6, 1978, Ser. No. 913,152
Int. Cl.² B60K 33/00
U.S. Cl. 290—38 R **20 Claims**



1. A starting apparatus for an engine, said starting apparatus comprising:

engine starting equipment connected to the engine,

first means for generating a sequence of first signals,

second means for providing second signals,

control means responsive to said first signals and said second signals for operating said engine starting equipment,

first switch means connected to said first means for initiating the generation of said first signals,

second switch means for selectively coupling said second signals to said control means,

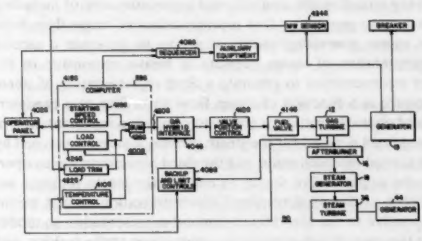
first latch means responsive to said second switch means for enabling and disabling said first switch means, and

second latch means responsive to said second switch means for enabling and disabling said first signals.

4,201,923
COMBINED CYCLE ELECTRIC POWER PLANT AND A GAS TURBINE HAVING IMPROVED MEGAWATT LOAD CONTROL

Terry J. Reed, North Huntingdon, and Jack R. Smith, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,730
Int. Cl.² H02P 9/04
U.S. Cl. 290—40 R **21 Claims**



1. A gas turbine electric power plant comprising a compressor section and a turbine section, a plurality of combustors for energizing the driving gas flow for the turbine section, means for generating electric power under the driving power of the turbine, a gas turbine control system including means for controlling the flow of fuel to the turbine combustors, means for generating a fuel reference having one portion thereof corresponding to load demand in units of electrical power generation and having another portion thereof corresponding to the

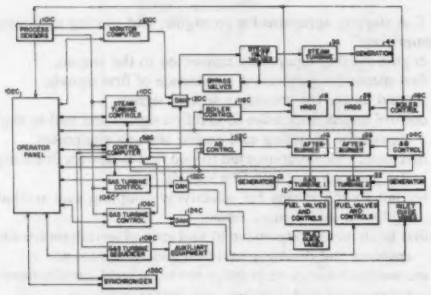
fuel required for idling operation, and means for coupling said fuel reference generating means to said fuel flow controlling means.

4,201,924

COMBINED CYCLE ELECTRIC POWER PLANT WITH A STEAM TURBINE HAVING A SLIDING PRESSURE MAIN BYPASS AND CONTROL VALVE SYSTEM

Robert Uram, East Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 13, 1974, Ser. No. 497,503
Int. Cl.[2] H02P 9/04
U.S. Cl. 290—40 R **16 Claims**



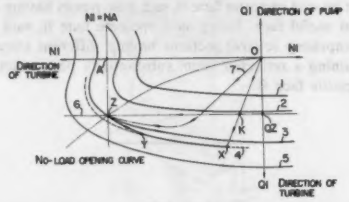
1. A combined cycle electric power plant comprising at least one gas turbine, means for generating steam in response to heat energy from the gas turbine, a steam turbine driven by steam supplied to it from the steam generating means, means for generating electric power under the driving power of the turbines, control valve means to control the admission of steam from the steam generating means to the steam turbine, bypass valve means to control the steam from the steam generating means to bypass the steam turbine, means for controlling the operation of the steam generating means and the turbines, said controlling means including a steam turbine control system having an automatic control, said automatic control including a means to generate a first representation of steam flow from the steam generating means, a means to generate a second representation of steam pressure, a means responsive to the first representation to generate a third representation of steam pressure as a function of steam flow according to a predetermined characterization, a means to generate a representation of speed/load demand for the steam turbine, a means governed by the second representation and the third representation to operate the bypass valve means to control the steam pressure according to the predetermined characterization, a first means responsive to the speed/load demand representation to modulate the control valve means to admit steam to the turbine, and a second means governed by the second and third representation to operate the control valves to control the steam pressure to be not less than a predetermined variation from said predetermined characterization whereby the bypass valves are operated to maintain a predetermined pressure flow relationship to the steam turbine, and the control valves respond to the predetermined pressure flow relationship only when the bypass valve is closed to minimize the probability of water carryover into the steam turbine.

4,201,925

METHOD FOR STARTING HYDRAULIC TURBINE GENERATOR

Takao Kuwabara; Hiroshi Okumura, and Toshiaki Yokoyama, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 25, 1977, Ser. No. 818,594
Claims priority, application Japan, Jul. 26, 1976, 51-88214
Int. Cl.[2] H02P 9/04
U.S. Cl. 290—52 **2 Claims**



1. A method for starting a hydraulic turbine system having a generator, a turbine with a runner coupled to drive the generator at a rated r.p.m., and wicket gates for adjusting the flow rate of water running into the runner, comprising the steps of:

quickly opening the wicket gates from a fully closed condition of the rates until the flow rate of the water reaches the fixed flow rate that corresponds to operation of the turbine at rated r.p.m. and the design no-load wicket gate opening for the head during the step;

thereafter slowing opening the wicket gates to maintain the fixed flow rate as the speed increases to the rated r.p.m., to thereby compensate for the tendency to reduce turbine flow rate with an increase in r.p.m. of the runner; and

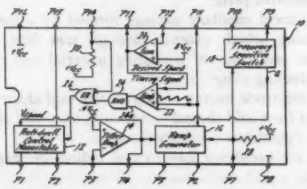
thereafter synchronizing the turbine-generator at no-load to an electric power transmission system.

4,201,926

ELECTRONIC CIRCUIT FOR USE IN A VARIETY OF ENGINE CONTROL SYSTEMS

LaVerne A. Caron, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 752,493, Dec. 20, 1976, Pat. No. 4,102,310.
This application Mar. 13, 1978, Ser. No. 885,913
Int. Cl.[2] H03K 19/08; F02P 5/04
U.S. Cl. 307—141 **9 Claims**



6. In an electronic timing control circuit the subcombination comprising:

first and second terminals adapted to be connected with a DC power supply for energizing circuitry of the subcombination;

an output stage which is switchable from one state to another state to produce at an output thereof an output signal;

a third terminal connected with said output of said output stage and at which said output signal is given;

a fourth terminal adapted to receive a variable frequency trigger signal;

a fifth terminal adapted to receive a variable frequency trigger signal;

a sixth terminal adapted to receive a desired timing signal representing desired timing of said output signal;

circuit means coupling said fourth, fifth, and sixth terminals and said output stage such that when a trigger signal is received at said fourth terminal said output stage will produce said output signal in response thereto so long as said output stage is in its one state at the time that the effect of the trigger signal received at said fourth terminal is felt by said output stage, and when a trigger signal is received at said fifth terminal at a frequency greater than a selected frequency, a desired timing signal received at said sixth input terminal will control, at least in part, the time at which said output stage produces said output signal;

at least one additional terminal associated with said output stage adapted to be connected with at least one circuit device external to the circuitry of the subcombination for imparting a desired characteristic to said output stage; and

at least one further terminal associated with said means adapted to be connected with a further at least one circuit device external to the circuitry of the subcombination for imparting a desired characteristic to said means.

4,201,927

CIRCUIT FOR PRODUCING SEQUENTIALLY SPACED PULSES

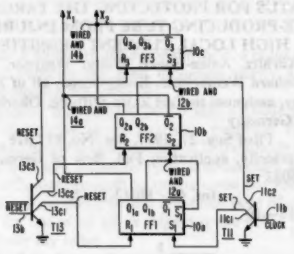
Borys Zuk, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 8, 1978, Ser. No. 903,688

Claims priority, application United Kingdom, May 24, 1977, 21890/77

Int. Cl.[2] H03K *3/286, 5/13*

U.S. Cl. 307—269 **5 Claims**



1. A circuit for generating two consecutive, non-overlapping pulses, comprising:

first, second, and third bistable circuit elements, each bistable element having a set input for setting the element to one stable state, a reset input for setting the element to another stable state, and true and false outputs; each bistable element being of the type which is set to said one stable state when the signal at its set input makes a transition from a first binary value to a second binary value subsequent to the signal at its reset input having made a transition to said second binary value; each bistable circuit being initially in a stable state;

means for applying an input signal of one binary value to said set input of said first bistable element for setting it to its second stable state, other than its initial state;

means, responsive to said input signal representing a bit of the other than said one binary value and to said first bistable circuit being in its second stable state, coupled to the set input of said second bistable circuit, for setting it to its second, other than initial, stable state;

means, responsive to said input signal representing a bit of said one binary value and to said second bistable circuit being in its second stable state, coupled to the set input of said third bistable circuit for setting it to its second other than initial, stable state;

means for combining outputs of said first and second bistable circuits for producing a first pulse; and

means for combining outputs of said second and third bistable circuits for producing a second pulse consecutive to, and non-overlapping with, said first pulse.

4,201,928

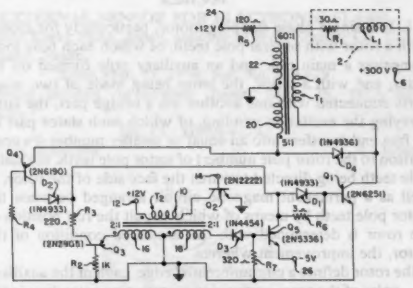
POWER TRANSISTOR ACTUATING AND BOOTSTRAP DRIVE CIRCUIT

Philip W. Koetsch, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 27, 1978, Ser. No. 872,965

Int. Cl.[2] H03K *1/00*

U.S. Cl. 307—270 **7 Claims**



1. A drive circuit for a switching transistor, said switching transistor comprising a base, collector, and emitter and being adapted to control the application of electrical power to an inductive load, comprising:

an actuating circuit connected to deliver a first gating current to the base of said switching transistor in response to a driving signal, the magnitude of said current being sufficient to actuate and maintain said switching transistor in a conductive state during a low range;

a bootstrap drive circuit connected to deliver a second gating current to the base of said switching transistor, the magnitude of which varies in positive proportion to the switching transistor's load and is sufficient to maintain said switching transistor in a conductive state for loads in excess of said low load range;

circuit means for rapidly deactuating said switching transistor in response to the removal of a driving signal, said deactuating circuit means comprising a deactuating switching transistor connected in circuit with the base of said switching transistor so as to render said switching transistor nonconductive when said deactuating switching transistor is conductive; and

a pulse transformer having a primary winding adapted to receive a driving pulse signal, a first secondary winding connected in circuit with the remainder of said actuating circuit, and a second secondary winding connected in circuit with the base of said deactuating switching transistor to render said deactuating switching transistor nonconductive when a drive pulse is applied to said pulse transformer, and conductive during the absence of a drive pulse at said pulse transformer.

4,201,929
SINGLE PHASE STEPPING MOTOR

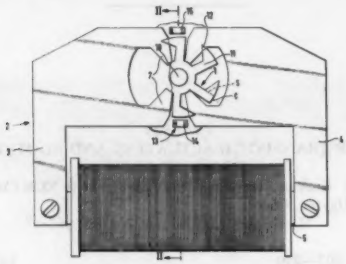
Roland Sudler, Frankfurt, and Walter Happel, Morfelden, both of Fed. Rep. of Germany, assignors to Quarz-Zeit AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 13, 1978, Ser. No. 877,101

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1977, 2707251

Int. Cl.[2] H02K *37/00*

U.S. Cl. 310—49 R **7 Claims**



1. In a single phase stepping motor, particularly for clocks, with a rotor with several pole teeth, of which each pole tooth comprises a main pole and an auxiliary pole formed on the latter, and with a stator, the latter being made of two stator parts connected with one another via a bridge part, the latter carrying the excitation winding, of which each stator part on its free end transfers into an equal or smaller number (in comparison to the rotor pole number) of stator pole teeth, the stator pole teeth being directed towards the face side of the rotor, as well as a permanent magnetic circuit arranged between the stator pole teeth by means of which circuit the rest position of the rotor is determined with the unexcited condition of the stator, the improvement wherein

the rotor defines a circumferential edge, each of the auxiliary poles of the rotor comprising a projection extending in the circumferential direction in the region of the edge of the rotor,

the stator pole teeth and the rotor pole teeth radially overlap so that respective face sides face each other, the permanent magnetic circuit comprises at least one permanent magnet spaced apart from said stator and from said rotor, said at least one permanent magnet being arranged beyond the circumferential edge of the rotor and having a pole axis extending substantially tangential to the rotor and a size such that a part of the magnetic lines of force close across a zone of the circumferential edge solely of one main pole and corresponding auxiliary pole formed on the latter constituting a single rotor pole of the rotor, respectively,

means including the excitation winding for alternatingly exciting the stator parts.

4,201,930
AC GENERATOR HAVING A CLAWTOOTH ROTOR WITH IRREGULAR TRAPIZOIDAL TEETH

Mitsuo Inagaki, Okazaki; Yoshiyuki Hattori, Toyoake, and Masahiro Taguchi, Nishio, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

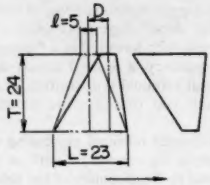
Filed Jul. 7, 1978, Ser. No. 922,851

Claims priority, application Japan, Jul. 15, 1977, 52-85466

Int. Cl.[2] H02K *5/24, 1/22*

U.S. Cl. 310—51 **2 Claims**

1. In an AC three-phase generator including an armature core having a plurality of teeth arranged with a predetermined slot pitch, a plurality of three-phase armature windings wound on said armature core and a rotor disposed to face said armature core with a small gap therebetween and having at least one pair of finger magnetic poles disposed to be energized to opposite polarities, the improvement wherein each of said finger magnetic poles has its surface facing said armature core formed into an irregular trapezoidal shape having a base of about three times as wide as said slot pitch and a side opposite



to said base, said base and said side having center points, the center points of said side displaced with respect to the center point of said base in the direction of rotation of said rotor, the ratio of the displacement of said side to said predetermined slot pitch being in the range of 0.2 to 0.7.

4,201,931
APPARATUS FOR PROTECTING THE TARGET OF AN IMAGE-PRODUCING TUBE FROM INJURIOUSLY HIGH LOCAL CURRENT DENSITIES

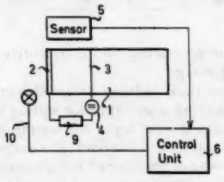
Günther Kürbitz, Aalen-Ebnat; Walter Wegener, Aalen, and Hans-Richard Weinheimer, Königsbronn, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Sep. 27, 1977, Ser. No. 837,016

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2645032

Int. Cl.[2] H01J *31/26*

U.S. Cl. 315—10 **7 Claims**

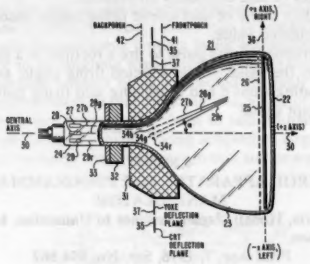


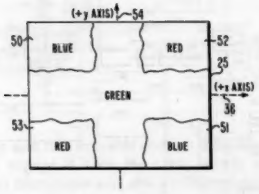
1. Apparatus for protecting the target of an image-producing tube from injuriously high local current densities, attributable to excessively high local-illumination at the cathode of such tube, comprising detector means responsive to onset of an unacceptably high local-illumination intensity condition at the cathode, such response producing an electrical pulse output upon occurrence of said condition, control means connected to the output of said detector means, a cathode-target excitation circuit including a variable-resistance element, and means connected to said control means and operative to rapidly change the resistance of said variable-resistance element upon the occurrence of such an electrical pulse output of said detector means, such rapid change being in the direction and to a value which reduces electron flow between the cathode and target of the tube.

4,201,932
COLOR PURITY ADJUSTING METHOD

Joseph L. Smith, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 6, 1978, Ser. No. 875,534
Int. Cl.[2] H01J *29/50, 31/00*
U.S. Cl. 315—13 C 13 Claims





1. A method of adjusting for color purity of a color cathode ray tube, said cathode ray tube including purity adjusting apparatus, comprising the steps of:

placing magnetic apparatus adjacent said cathode ray tube capable of generating an auxiliary magnetic field and magnetizing metallic components of said cathode ray tube with said auxiliary magnetic field, said auxiliary magnetic field of sufficient strength to create upon the removal of said auxiliary magnetic field a remanent field of sufficient strength for use as an aid in adjusting the color purity of said cathode ray tube;

removing said auxiliary magnetic field;

operating said cathode ray tube to generate a color pattern upon the screen of said cathode ray tube by the interaction of said remanent field with at least one electron beam of at least one electron gun of said cathode ray tube; and

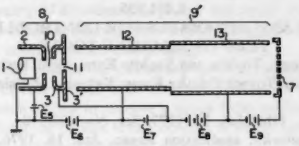
adjusting said purity adjusting apparatus to obtain a color pattern indicative of a correct color purity.

4,201,933
ELECTRON GUN STRUCTURE FOR A PICKUP TUBE

Takanori Hisada, Yokohama, and Kyohei Fukuda, Mobara, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 22, 1978, Ser. No. 908,372
Claims priority, application Japan, May 27, 1977, 52-60974
Int. Cl.[2] H01J *29/56*
U.S. Cl. 315—16 5 Claims

3. An electron gun structure for a pickup tube having a target, comprising: a cathode lens electrode assembly including a cathode for producing an electron beam and a plurality of electrodes; a beam disc electrode having a beam limiting hole; a main lens electrode assembly for accelerating and focusing said electron beam, said beam disc electrode being between said cathode lens electrode assembly and said main lens electrode assembly; and means for supplying potentials to said cathode lens electrode assembly, said beam disc electrode and said main lens electrode assembly for establishing a crossover in said cathode lens electrode assembly and for making the beam spot on the target of the tube minimum; in which said main lens electrode assembly includes a first electrode and a second electrode arranged in succession in the direction of the passage of said electron beam, and said potential supplying means includes first means for supplying said first and second

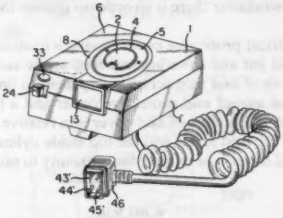


electrodes with first and second potentials to form a bipotential electron lens in said main lens electrode assembly and second means for supplying said beam disc electrode with a third potential, said first potential being lower than said second potential and the ratio of said third potential to said first potential being set to provide substantially a minimum coefficient of aberration for the main lens electrode assembly.

4,201,934
EXTERNAL SENSOR FOR ELECTRONIC FLASH

Koreaki Esaki, Suita, Japan, assignor to West Electric Co., Ltd., Osaka, Japan

Filed Mar. 21, 1978, Ser. No. 888,629
Claims priority, application Japan, Mar. 25, 1977, 52-36718[U]
Int. Cl.[2] H05B *41/32*
U.S. Cl. 315—151 4 Claims



1. An external sensor detachably connected to an electronic flash of the type having a flash control circuit capable of controlling the flash duration of a flash tube which flashes by discharging the energy stored on a main capacitor, said external sensor comprising

(a) a light receiving unit for generating a flash interrupt signal when the amount of light reflected back from a subject and received by said light receiving unit has reached a predetermined level and for transmitting said flash interrupt signal to said flash control circuit in said electronic flash,

(b) a mode selection switch for selecting an automatic flash exposure mode wherein the flash duration is controlled by said flash interrupt signal from said light receiving unit or a manual flash exposure mode wherein said light receiving unit is disabled,

(c) a display means which is turned on when said mode selection switch is set to said automatic flash exposure mode,

(d) flash exposure data display means for displaying flash exposure data comprising film speed, aperture, and distance to a subject, said display means being illuminated by said first-mentioned display means in said automatic flash exposure mode,

(e) a pair of molds which house said light receiving unit, said

mode selection switch, said first-mentioned display means and said flash exposure data display means, and

(f) a window through one of said pair of molds for permitting a user to view the data displayed by said flash exposure data display means.

4,201,935

METHOD AND APPARATUS FOR CONTROLLING THE FEED OF MACHINE TOOLS

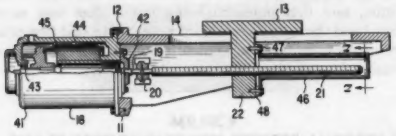
Nobuo Fukuma, Toyota, and Yoshito Kato, Aichi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 17, 1977, Ser. No. 760,010

Claims priority, application Japan, Jan. 16, 1976, 51-4531; Sep. 3, 1976, 51-119367[U]; Oct. 28, 1976, 51-145011[U]

Int. Cl.[2] H02K *7/10*

U.S. Cl. 318—15 **2 Claims**



1. An improved D.C. motor driven feed including a screw and nut which moves the table of a machine tool through predetermined positions in accordance with orders to change the rate of feed, said apparatus comprising:

a power damping circuit;

a switching circuit for electrically coupling said power damping circuit to said D.C. motor for a predetermined time whenever there is an order to change the rate of feed; and

a cylindrical protective cover having a central axis coupled to said nut and covering said feed screw such that a central axis of said feed screw is displaced to one side of said central axis of said protective cover and a bottom inside cylindrical surface of said cover is in relative near proximity to the feed screw and the top inside cylindrical surface of said cover is in relative far proximity to said feed screw.

4,201,936

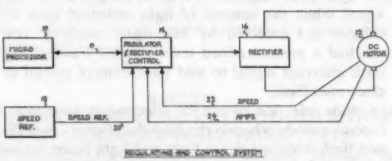
MOTOR SPEED REGULATOR AND CONTROL SYSTEM

Paul J. Roumanis, Stratford, Conn., assignor to General Electric Company, Salem, Va.

Filed Dec. 10, 1976, Ser. No. 749,641

Int. Cl.[2] H02P *5/12*

U.S. Cl. 318—341 **10 Claims**



1. A method of controlling a DC motor in a system of the type including a data processor programmed to calculate a firing angle to develop a firing pulse to fire a controllable rectifier connected between an AC source and the DC motor to regulate the speed thereof, comprising the steps of:

(a) providing, in the processor, stored parameters proportional to desired motor speed and firing angles;

(b) generating an interrupt signal to the processor;

(c) directing the processor, in response to said interrupt signal, to,

(1) read a value proportional to acutal motor speed,

(2) read a value proportional to motor current,

(3) calculate a value proportional to firing angle as specified by the combined differences between the desired motor speed and said actual motor speed and a value proportional to a previously read motor current and the last read motor current and previously calculated differences of said combined differences,

(4) select a one of said stored firing angles based on said calculated value,

(d) generating a firing pulse to fire a rectifier at a time specified by the value of said selected firing angle; and

(e) repeating steps c and d utilizing said firing pulse as said interrupt signal.

4,201,937

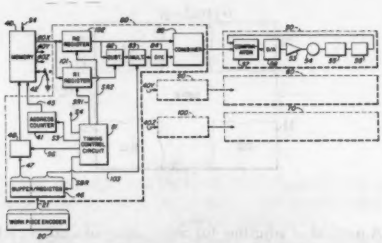
CONTROL APPARATUS FOR PROGRAMMABLE MANIPULATOR

Akiyoshi Irie, Himeji, Japan, assignor to Unimation, Inc., Danbury, Conn.

Filed Apr. 7, 1978, Ser. No. 894,562

Int. Cl.[2] G05B *19/24*

U.S. Cl. 318—568 **30 Claims**



1. In a programmable manipulator having a manipulator arm movable in a plurality of axes, control apparatus for controlling the movement of the manipulator arm to describe a predetermined work operation with respect to a workpiece capable of movement along a predetermined path, said control apparatus comprising:

means for storing two or more series of command signals, each of said series of command signals representing the same series of points along the predetermined work operation with respect to the workpiece at respective positions of the workpiece;

means for generating a workpiece position signal representing the position of the workpiece along the predetermined path;

means responsive to said workpiece position signal and the two series of command signals that correspond to the two respective workpiece positions on either side of said workpiece position signal for generating interpolation control signals accounting for workpiece position;

means for controlling said interpolation signal generating means to successively interpolate between said two series of command signals along said series of points; and

means responsive to said interpolation control signals for moving said manipulator arm.

4,201,938

VOLTAGE REGULATOR WHICH ELIMINATES ARCING DURING TAP CHANGES

Manfred E. Neumann, New Berlin, Wis., assignor to Siemens-Allis, Inc., Atlanta, Ga.

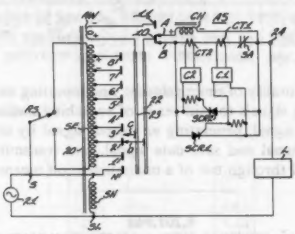
Filed Oct. 2, 1978, Ser. No. 947,871

Int. Cl.[2] G05F *1/14*

U.S. Cl. 323—43.5 R **8 Claims**

1. In a tap changing voltage regulator having an exciting winding, a tapped electrical winding inductively linked to said

exciting winding and having a plurality of taps, a pair of tap changer switch selector contacts adapted to sequentially engage said taps, an auxiliary winding inductively linked to said exciting winding and being coupled at one end to one of said selector contacts, an auxiliary switch having first and second stationary contacts connected respectively to the other end of said auxiliary winding and to the other selector contact and also having first and second movable contacts normally engaging the same stationary contact and a pair of normally closed contacts, said first movable contact being connected through an inductor to an outgoing load-current-carrying line and said second movable contact being connected through said normally closed contacts to said outgoing line, a pair of inversely parallel thyristors connected in shunt to said normally closed contacts, said auxiliary switch being adapted to step said first and second movable contacts between said stationary contacts

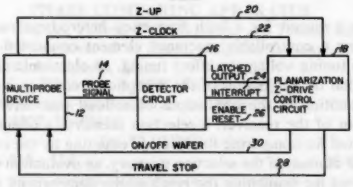


and to disengage said first movable contact from one stationary contact and to engage it with the other before said second movable contact disengages said one stationary contact and to then open said normally closed contacts and to subsequently disengage said second movable contact from said one stationary contact and engage it with the other, whereby circulating current may flow through said movable contacts, said inductor and said normally closed contacts when said selector contacts bridge adjacent taps during a tap change, means for supplying gating current to said thyristors during a tap change and for removing said gating current subsequent to the opening of said normally closed contacts but prior to the disengagement of said second movable contact from said one stationary contact, whereby circulating and load current are statically interrupted by said thyristors at a current zero and said second movable contact is then free to move arclessly into engagement with said other stationary contact.

4,201,939
MULTIPROBE CONTACT MONITOR AND CONTROL SYSTEM

Edward C. Lee, and Thillaigovindan Natarajan, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 26, 1978, Ser. No. 918,905
Int. Cl.[2] G01R *31/02, 1/06*
U.S. Cl. 324—158 P **7 Claims**



1. A planarization and overtravel control circuit for a multiprobe test system having a multiprobe device with a plurality of data-detector probes attached thereto for testing a semiconductor wafer having a plurality of integrated circuits disposed thereon, and further detecting contact of said plurality of data-detector probes with the surface of said semiconductor wafer, said plurality of data-detector probes electrically connected to a detector circuit where signals from said data-detector probes are electrically screened to designate when any one of said plurality of data-detector probes has made contact with the surface of said semiconductor wafer; said planarization and overtravel control circuit comprising:

reset circuit means for delivering an electrical signal to a latch circuit within said detector circuit for initializing said latch circuit to receive a signal from said plurality of data-detector probes when contact is made with the surface of said semiconductor wafer;

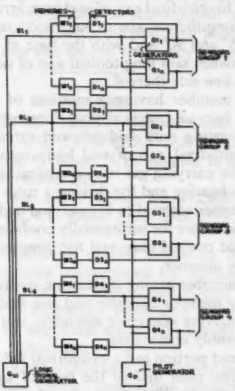
planarization monitor circuit means electrically connected to said reset circuit means for determining when said data-detector probes lie within a predetermined planarization limiting resetting the said latch circuit of said detector circuit when any one of said plurality of data-detector probes falls outside said planarization limit; and

overtravel control circuit means for determining when the data-detector probes have travelled a predetermined distance into said semiconductor wafer.

4,201,940
METHOD AND APPARATUS FOR MEASURING THE POSITION OF REGULATING RODS IN A NUCLEAR REACTOR

Regis Dardenne, Roselies, Belgium, assignor to ACEC, Ateliers de Constructions Electriques de Charleroi, Charleroi, Belgium

Continuation of Ser. No. 710,107, Jul. 30, 1976, abandoned. This application Jun. 20, 1978, Ser. No. 917,274
Claims priority, application Belgium, Jul. 31, 1975, 158796
Int. Cl.[2] G01R *33/00*
U.S. Cl. 324—207 **2 Claims**



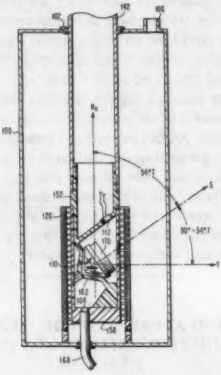
1. A method for measuring the position of regulating rods in a nuclear reactor through the measure of a voltage appearing across the terminals of an induction coil fed by a constant current AC supply, each regulating rod being interlocked with a control rod able to move along the longitudinal axis of said coil, said process comprising the steps of arranging said regulating rods into a certain number of groups in such a way that the said regulating rods are randomly distributed throughout the reactor so that no two regulating rods in the same group are located close to one another, feeding the thus formed groups of regulating rods in sequence, measuring the voltage appearing across the terminals of the coils of each group during a time interval corresponding to the feeding time interval of that group, and memorizing said voltage for a time interval corresponding to the non-feeding time period of the group.

4,201,941

SPINNING APPARATUS FOR NMR SPECTROMETERS

Colin A. Fyfe, Guelph, Canada; Horst G. Mossbrugger, San Jose, and Costantino S. Yannoni, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1978, Ser. No. 930,846
Int. Cl.[2] G01R *33/08*
U.S. Cl. 324—321 **18 Claims**



1. Spinning apparatus for nuclear magnetic resonance spectrometers, including

a stator assembly comprising

a body member having a central longitudinal axis,

said body member having a conical bore arranged therein with the apex of said bore at one side of the body member with the longitudinal axis of said bore arranged at an angle to said longitudinal axis of said body member lying between 45° and 90° and with the base of the conical bore lying between said longitudinal axis of said body member and said one side thereof,

said body member having a multiple of apertures therethrough into said conical bore forming jets and a bore communicating with said jets and extending parallel to said longitudinal axis of said body member to one end thereof for carrying gas to said conical bore for establishing a gas bearing and for driving a rotor assembly, and

a cover member adapted to fit over said body member about said conical bore for substantially confining a rotor assembly in said conical bore and for directing driving gas in said body member,

said cover member having at least one aperture on the side of said body member opposite said one side for venting gas spent in driving said rotor assembly, and

a rotor assembly comprising

a conical head portion and a cylindrical tail portion of diameter smaller than that of the base of said conical head portion with the dimensions of said conical head portion in part substantially complementing those of said conical bore and in part substantially departing from those of said conical bore in said stator assembly, and

the overall dimensions of said rotor assembly are less than the internal dimensions delimited by said cover member.

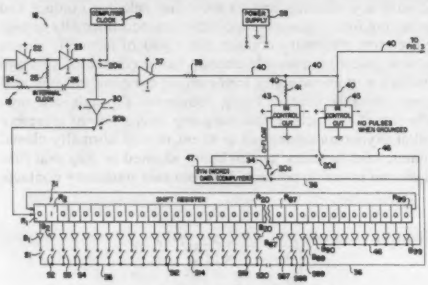
4,201,942

DATA CONVERSION SYSTEM

Edward W. Downer, 5252 Evergreen Dr., North Olmsted, Ohio 44070

Filed Mar. 8, 1978, Ser. No. 884,696
Int. Cl.[2] H04B *1/00*
U.S. Cl. 375—17 **11 Claims**

1. A data conversion method comprising the steps of generating a repetitive clock signal having first and second phases of a predetermined amplitude, representing a series of binary digits through actuation of a series of switching means each having a first condition corresponding to one binary situation and a second condition corresponding to the other binary situation, inputting said clock signal to a counting means to



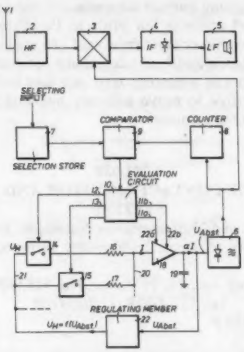
produce a plurality of timing signals, and inputting said plurality of timing signals to said series of switching means to produce a data signal, generating an output signal by combining said clock signal and said data signal, and transmitting said output signal through use of a communication means.

4,201,943

TUNING CIRCUIT FOR A HIGH FREQUENCY HETERODYNE RECEIVER WITH TUNING CONTROLLED BY DIRECT VOLTAGE

Otto Klank, Arpke, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 3, 1978, Ser. No. 892,868
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1977, 2718472
Int. Cl.[2] H04B *1/16*
U.S. Cl. 455—185 **9 Claims**



1. In a circuit for a high frequency heterodyne receiver, including a controllable reactance element connected to receive a tuning voltage to effect tuning, an electronic counter for digital determination of the reception frequency by periodic counting of the oscillations of at least one heterodyne oscillator of the receiver, a selection memory, a comparator connected for comparing the result of counting by the counter with the content of the selection memory, an evaluation circuit connected for evaluating the result of the comparison, and an integrating circuit including a capacitor connected to be controlled by the evaluation circuit for producing the tuning voltage, the improvement wherein said circuit further comprises means connected to supply a charging current to said

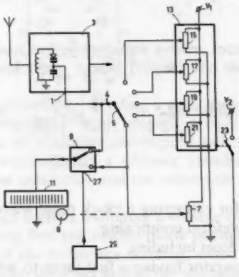
capacitor, said means including a source of an auxiliary voltage, a plurality of circuit units connected in parallel with one another between said voltage source and said integrating circuit, each said circuit unit being composed of a series arrangement of a resistor and an electronic switch connected to have its switching state controlled by a respective component of the comparison result produced by said comparator, whereby the charging current to said capacitor is a function of the value of the auxiliary voltage and the switching states of said electronic switches, and regulating means connected for causing the value of said auxiliary voltage to be a function of the value of said tuning voltage.

4,201,944

RECEIVER HAVING A MEASUREMENT INSTRUMENT WHICH IS USED AS A TUNING SCALE

Johan W. Beunders, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 790,297, Apr. 25, 1977, abandoned.
This application Nov. 6, 1978, Ser. No. 958,319
Claims priority, application Netherlands, Apr. 27, 1976, 7604444
Int. Cl.[2] H04B *1/06*
U.S. Cl. 455—155 **4 Claims**



1. A receiver comprising a tuning section, an adjustable tuning signal source means for supplying to said section an electrical quantity corresponding to a frequency, a presettable tuning signal source means for supplying to said section an electrical quantity corresponding to a frequency, said electrical quantities causing said tuning section to be tuned to said corresponding frequencies respectively, a measuring instrument means for indicating the frequency to which an electrical quantity supplied by one of said sources corresponds, and means for providing presetting of said presettable source to an electrical quantity equal to an electrical quantity of said adjustable source including periodic commutator means coupled to said measuring instrument and source and means for alternately coupling each of said source means to said measuring instrument means.

4,201,945

PHASE COMPARING APPARATUS

Tsutomu Ohgishi, Yahata; Toru Akiyama, and Tadashi Sakurai, both of Neyagawa, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed May 8, 1978, Ser. No. 903,789
Claims priority, application Japan, May 20, 1977, 52/60183; May 20, 1977, 52/60184
Int. Cl.[2] H04B *1/06*
U.S. Cl. 455—183 **20 Claims**

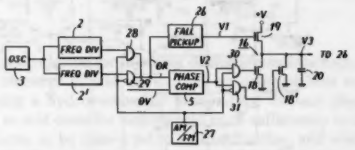
11. A phase comparing apparatus, comprising:

means for providing a first frequency signal of a reference frequency,

means for providing a second frequency signal of a frequency or phase being compared with that of said first frequency signal,

phase comparator means responsive to said first and second frequency signal providing means for comparing the frequencies or phases of said first and second frequency signals for providing an output representative of a frequency difference or a phase difference between said first and second frequency signals,

charging/discharging circuit means responsive to one of said first and second frequency signal providing means for being forced to one of the charged and discharged states and responsive to the output of said phase comparator means for being forced toward the other of the charged and discharged states at a predetermined time constant as a function of said output of said phase comparator means, and



means for providing a third frequency signal of a frequency lower than those of said first and second frequency signals,

first state storing means coupled to said charging/discharging circuit means and said third frequency signal providing means and responsive to a predetermined level between said one and said other of charged and discharged states of the charging/discharging circuit means for assuming a first storing state and responsive to the third frequency signal for assuming a second storing state, and

second state storing means responsive to the output of the first state storing means and the third frequency signal for assuming one storing state for providing an output representative of the frequency difference or phase difference between the first and second frequency signals.

4,201,946

AM-FM DETECTOR CIRCUIT STABILIZED AGAINST FABRICATION AND TEMPERATURE VARIATIONS

Robert J. McFadyen, Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,645
Int. Cl.[2] H03D *3/22, 5/00*
U.S. Cl. 329—2 **10 Claims**

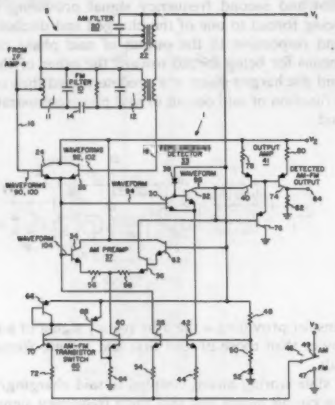
1. An AM-FM detector circuit exhibiting highly stable operating characteristics compensated for fabrication process and ambient temperature variations, said circuit being selectively responsive to frequency modulated signals of a first center frequency or amplitude modulated signals of a second center frequency, comprising:

(a) a differentially connected emitter follower pair of transistors of matching current conduction properties, the collectors of which are adapted to be coupled to dc voltage means, the emitters of which are joined and coupled to a switchable load impedance and the bases of which are adapted to receive said frequency modulated signals in a quadrature phase relationship at said first center frequency for a condition of zero signal modulation and are adapted to receive said amplitude modulated signals in an inverse phase relationship at said second center frequency, for producing at said emitters during frequency modulation detection a bipolar voltage having zero crossing widths proportional to the frequency modulation and for producing at said emitters during amplitude modulation detection a detected voltage resulting from full wave rectification of the amplitude modulated signals,

(b) zero crossing detector means operable during frequency

modulation detection and responsive to said bipolar voltage at said emitters for generating current pulses of relatively constant amplitude and of pulse widths corresponding to said zero crossing widths,

(c) differential amplifier means operable during amplitude modulation detection and responsive to said detected voltage at said emitters for providing linear amplification of said voltage by generating a corresponding amplified current, and



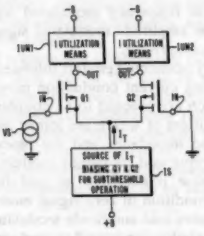
(d) output means including a transistor current amplifier responsive during frequency modulation detection to the current pulses generated by said zero crossing detector means for integrating said pulses and providing a first amplified output current having a time averaged amplitude proportional to the modulation of said frequency modulated signals, and responsive during amplitude modulation detection to the current generated by said differential amplifier means for providing a second amplified output current having an amplitude proportional to the modulation of said amplitude modulated signals.

4,201,947

LONG-TAILED-PAIR CONNECTIONS OF MOSFET'S OPERATED IN SUB-THRESHOLD REGION

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 10, 1978, Ser. No. 876,634
Int. Cl.[2] H03F *3/45, 3/16;* H03K *5/20*
U.S. Cl. 330—253 **3 Claims**



1. In a long-tailed pair connection of first and second transistor means having respective input electrodes and having respective common and output electrodes between which an output current flows responsive to an input voltage between its common and input electrodes, the transconductances of which transistor means change more rapidly as a function of their output currents in a range of lower output currents, with means for supplying the entire tail current for said long-tailed pair connection to the interconnected common electrodes of said first and second transistor means, the improvement for the purpose of reducing the input offset error potential which would have to be applied between the input electrodes of said transistor means to maintain the division of the tail current between them in predetermined ratio, wherein said means for supplying the entire tail current for said long-tailed pair consists of:

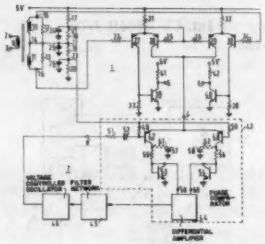
means for supplying said tail current within said range.

4,201,948

PHASE-LOCKED LOOP CLOCK PULSE EXTRACTION CIRCUIT

Marcel C. R. Natens, Antwerp, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 24, 1978, Ser. No. 909,241
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—8 **9 Claims**



1. A circuit for extracting a clock pulse waveform from an input pulse waveform comprising:

a phase-locked loop including

a phase comparator having a first input to which said input waveform is coupled, a second input and an output which is coupled in cascade with at least a voltage controlled oscillator whose output is coupled to said second input, said clock waveform being present at said output of said oscillator and having negative going transitions occurring substantially in the middle of the pulses of said input waveform;

said phase comparator including

gating means coupled to said first and second inputs controlled by said clock waveform and said input waveform to produce first and second intermediate pulse waveforms each having pulses constituted by different portions of the pulses of said input waveform and proportional to the pulse density of said input waveform,

filter means connected directly to said gate means responsive to said first and second intermediate waveforms to produce first and second output waveforms which are equal to the mean amplitude values of said first and second intermediate waveforms, and

subtractor means coupled to said filter means to produce a comparator output signal at said output of said comparator which is a function of the ratio of said first and second output waveforms and independent of the pulse density of said input waveform,

said gating means including

first and second gates each receiving said input waveform, said first and second gates being interconnected such that one of said first and second gates receives said clock waveform to control both of said first and second gates to produce said first intermediate waveform at the output of one of said first and second gates and said second interme-

diate waveform at the output of the other of said first and second gates, and

said filter means includes

first and second filter circuits each coupled to a different one of the outputs of said first and second gates to produce said first output waveform at the output of one of said first and second filter circuits and said second output waveform at the output of the other of said first and second filter circuits.

4,201,949

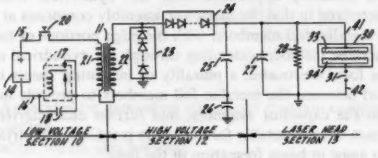
PORTABLE GAS LASER AND POWER SUPPLY

Gene A. Robbins, P.O. Box 7639, Roswell, N. Mex. 88201

Filed Jul. 27, 1977, Ser. No. 819,485

Int. Cl.[2] H01S 3/097

U.S. Cl. 331—94.5 PE **4 Claims**



1. A laser head and energization system, including:

a stepup transformer, having primary and secondary windings;

a low voltage section, including a pair of input conductors for receiving a d-c input voltage, a switch coupled between one of the input conductors and one side of the primary winding, and a vibrator coupled between the other input conductor and the other side of the primary winding;

a high voltage section, including a voltage doubler arrangement having first and second diode assemblies coupled to one side of the secondary winding, a first capacitor coupled between the other side of the secondary winding and one of the diode assemblies, and a second capacitor coupled between ground and the common connection between the secondary winding and the first capacitor; and

a laser head section, including a laser head containing a gas and having as the only electrically conductive members in the laser head a pair of electrodes with opposed, serrated edges to effect pre-ionization of the gas, a pair of conductive members, each attached to one of the electrodes and extending outwardly to provide means for establishing an electrical connection with an adjacent circuit, and a high-voltage capacitor comprising a plastic tube, a pair of foil electrodes and a plurality of dielectric layers between the pair of foil electrodes, which foil electrodes and dielectric layers are wound around the plastic tube to form said high-voltage capacitor, one of said foil electrodes extending to a point adjacent but spaced from one of the conductive members to define a spark gap, and means, including a conducting strip, for establishing an electrical connection between the other foil plate of the high voltage capacitor and the other of the conductive members attached to the electrodes.

4,201,950

LOW DEACTIVATION CHEMICAL LASER

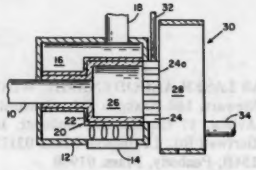
Thomas A. Barr, Jr., Huntsville; Miles E. Holloman, Decatur, and Joseph M. Walters, Harvest, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 3, 1978, Ser. No. 875,053

Int. Cl.[2] H01S 3/095

U.S. Cl. 331—94.5 G **7 Claims**

1. A low deactivation chemical laser device comprising an oven having a chamber therein that is lined with a ceramic material that resists the corrosive action of atomic fluorine and an inlet means to said chamber for the introduction of chemicals containing fluorine; a laser cavity having a chamber therein, an outlet for exhausting expended gases from said cavity, and laser output means; a laser nozzle injector fluidly interconnecting said chamber of said oven with said chamber of said laser cavity and an inlet injector connected into said



laser nozzle injector for injecting deuterium and/or hydrogen to said chamber of said cavity; and an external heat source comprising a hydrocarbon/air burner type furnace disposed relative to said oven for heating said oven sufficiently to cause said fluorine to be converted to atomic fluorine, and whereby said atomic fluorine can pass through said laser nozzle injector into said laser cavity to mix with said deuterium and/or hydrogen to cause a lasing action and a laser output to be produced.

4,201,951

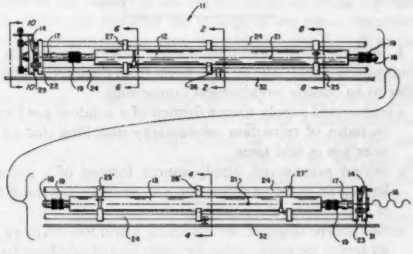
CASCADED PLASMA TUBE ION LASER HAVING SINGLE RESONATOR STRUCTURE

Galen E. Mohler, Los Altos, Calif., assignor to Lexel Corporation, Palo Alto, Calif.

Filed Apr. 3, 1978, Ser. No. 892,742

Int. Cl.[2] H01S 3/02

U.S. Cl. 331—94.5 D **13 Claims**



1. A cascaded ion laser comprising:

A. resonator structure supporting at opposed, spaced apart locations, means to mount a pair of optical reflectors in opposition to one another to define an optical axis therebetween;

B. lasing structure supported by said resonator structure defining an elongated optical cavity between said mounting means for said reflectors, which structure includes at least two plasma tube assemblies axially aligned with one another along said optical axis separately enclosing lasable mediums;

C. a base for said resonator structure; and

D. mounting structure connecting said base to said resonator structure, which mounting structure is secured to said resonator structure generally at the locations at which the respective planes orthogonal to said optical axis containing the centers of gravity of said two plasma tube assemblies meet said resonator structure, whereby the weight of said envelopes are balanced relative to said mounting structure to minimize the effect of unbalanced gravity

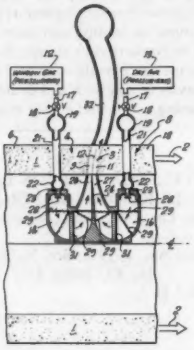
forces on the axial alignment of each of said envelopes with said optical axis.

4,201,952

GAS LASER AERODYNAMIC WINDOW

Charles C. Stewart, 144 Nashoba Rd., Concord, Mass. 01742; Joel M. Avidor, 17 Gordon St., Rehovot, Israel; Evan R. Pugh, 61 Bertwell Rd., Lexington, Mass. 02173, and John W. Lothrop, 154B, Peabody, Mass. 01960

Filed Apr. 11, 1978, Ser. No. 895,416
Int. Cl.[2] H01S 3/02
U.S. Cl. 331—94.5 D 5 Claims



1. Aerodynamic light-transmissive window apparatus for transmitting a high energy laser beam from the interior of a gas laser to an outside environment comprising:

a pressurized supply source formed of a window gas having an index of refraction substantially matching that of the laser gas in said laser,

a second pressurized supply source formed of a gas also having an index of refraction substantially matching that of said outside environment,

nozzle means disposed for directing a window-forming gas jet across the entire cross-sectional area of said laser beam, said nozzle means including means partitioning it into at least a pair of jet-forming orifices,

means communicably coupling each of said gas supply sources independently to a separate one of said jet-forming orfices whereby said window-forming gas jet is formed of contiguous first and second streams of said supply gases having a boundary interface one with the other and interfaces with said laser gas and said outside environment respectively, and

means for controlling the velocities of said contiguous streams,

whereby optical distortions normally produced by said shear and boundary interfaces are minimized by said equalized velocities at said boundary interface and by said matching indices of refraction at said shear interfaces,

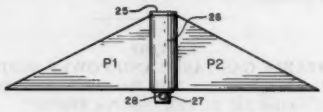
said window forming jet dynamically maintaining a fixed interior gas pressure and said control means equalizing the velocities of said streams and establishing a particular jet velocity at which said jet yieldably bends a fixed and predetermined amount responsively to said interior gas pressure whereby said interior pressure is maintained.

4,201,953

LASER SYSTEM WITH TRIANGULATED CAPACITOR ENCIRCLING THE LASER HEAD

Gene A. Robbins, P.O. Box 7639, Roswell, N. Mex. 88201

Filed May 1, 1978, Ser. No. 901,429
Int. Cl.[2] H01S 3/09
U.S. Cl. 331—94.5 PE 5 Claims



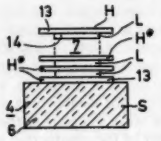
1. A laser head comprising a cylindrical member and a capacitor assembly concentric with said cylindrical member, characterized in that the capacitor assembly comprises at least three metallic foil members, with the edge portions of two of the metallic members extending through the cylindrical member to form electrodes, a plurality of insulating sheets interspersed between the metallic foil members to provide insulation in the capacitor assembly, and further characterized in that each of said metallic foil members is substantially triangular, to assist in beam formation in the laser.

4,201,954

GAS DISCHARGE LASER FOR GENERATING LINEARLY POLARIZED RADIATION

Johannes van der Wal, and Gijsbertus Bouwhuis, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1978, Ser. No. 907,554
Claims priority, application Netherlands, Mar. 7, 1978, 7802454
Int. Cl.[2] H01S 3/08
U.S. Cl. 331—94.5 C 3 Claims



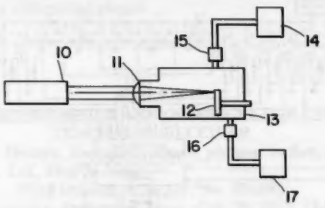
1. A gas discharge laser for generating linearly polarized radiation, comprising a laser tube and a set of two reflectors the optical axis of which coincides with the axis of the laser tube, said reflectors being composed of at least a substrate on which a number of layers are provided which preferably have a quarter wavelength thickness and alternately comprise two dielectric materials having different indices of refraction, at least one of the said reflectors reflecting anisotropically, and wherein at least one of the layers of the anisotropic reflector is so strongly anisotropic that the difference in reflection of the reflector for light polarized in two mutually perpendicular directions is at least 0.5%.

4,201,955

METHOD OF PRODUCING POPULATION INVERSION AND LASING AT SHORT WAVELENGTHS BY CHARGE TRANSFER

Raymond C. Elton, Potomac, and Robert H. Dixon, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1978, Ser. No. 889,072
Int. Cl.[2] H01S 3/22
U.S. Cl. 331—94.5 G 16 Claims



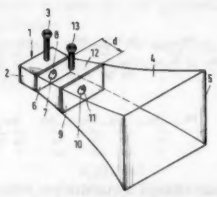
1. Apparatus for generating stimulated emission comprising:
a housing,
a target within said housing,
means for admitting a gaseous medium about said target,
laser means for irradiating said target to generate highly stripped target ions with varying velocities,
whereby reactions between said highly stripped target ions and a gaseous medium electron environment about said target produce a population inversion with stimulated emission.

4,201,956

ARRANGEMENT FOR THE GENERATION AND RADIATION OF MICROWAVES

Karl-Heinz Kienberger, Schopfheim-Wiechs, and Don J. R. Stock, Schopfheim-Langenau, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,368
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744883
Int. Cl.[2] H01Q 13/02; H03B 5/18, 9/12
U.S. Cl. 331—96 4 Claims



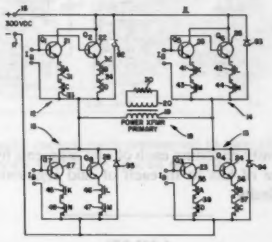
1. An arrangement for the generation and radiation of microwave radiation, including a microwave oscillator having a cavity resonator directly coupled with the input of a horn radiator by way of an apertured diaphragm, the cross-section of the horn radiator expanding in size from said input thereof to the output thereof and wherein there is arranged within the expanding horn radiator a second apertured diaphragm disposed at a distance from the first said apertured diaphragm such that together with the first said apertured diaphragm it forms a filter resonator for frequency filtering the oscillator output as it is fed to the horn radiator, the first apertured diaphragm being common to the oscillator cavity and to the filter resonator cavity.

4,201,957

POWER INVERTER HAVING PARALLEL SWITCHING ELEMENTS

Franklin J. Cathell, San Diego, Calif., assignor to Qualidyne Systems, Inc., Chula Vista, Calif.

Continuation-in-part of Ser. No. 835,403, Sep. 21, 1977, Pat. No. 4,105,957. This application Aug. 1, 1978, Ser. No. 930,095
Int. Cl.[2] H02M 7/537; H03K 3/30
U.S. Cl. 331—110 12 Claims



8. A circuit for switching current from a DC source to AC current to be supplied to a load comprising a DC series circuit including a first switch arm connected between one terminal of the source and one terminal for the load, a second switch arm connected between a second terminal for the load and a second terminal of the source, each of said switch arms including N parallel switching elements, each having a control electrode, an input electrode, and an output electrode, each of said elements being rendered into a conducting condition between the input and output electrodes thereof in response to the voltage of the control electrode being a predetermined amount greater than the voltage of the input electrode, and into a cut-off condition between the input and output electrodes thereof in response to the voltage of the control electrode being a predetermined amount less than the voltage of the input electrode, means for simultaneously applying a biasing signal to all of the switching elements so that the elements have a tendency to be simultaneously biased into conducting and cut-off conditions, different ones of said elements having a tendency to be activated into the conducting and cut-off states at different times in response to the biasing signal, means for overcoming the tendency of different ones of said elements to be activated at different times, said means for overcoming including means for coupling current flowing through the ith element of the first switch arm with current flowing through the ith element of the second switch arm, where i=1, 2, . . . , N.

4,201,958

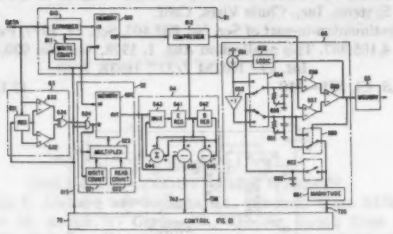
DELTA MODULATION WHICH PARTITIONS INPUT SIGNAL INTO VARIABLE-TIME SEGMENTS THAT ARE ITERATIVELY ENCODED

Syed V. Ahamed, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 864,499, Dec. 27, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 965,991
Int. Cl.[2] H03K 13/22
U.S. Cl. 332—11 D 8 Claims

1. A method for encoding an input signal into a bit stream representing a delta modulation of said input signal, characterized by the steps of:

partitioning said input signal into concatenated time segments based on selected characteristics of said signal; and



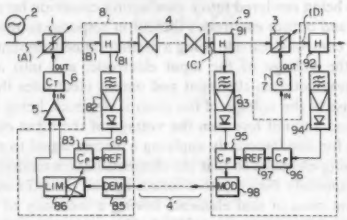
independently encoding each of said segments by selecting a sequence of bits to fit each of said segments within assigned limits.

4,201,959

AUTOMATIC EQUALIZATION SYSTEM

Yasuhiko Niiro, Yokohama, and Hiroharu Wakabayashi, Tokyo, both of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1977, Ser. No. 854,103
Claims priority, application Japan, Nov. 24, 1976, 51/140161
Int. Cl.[2] H04B *3/10*
U.S. Cl. 333—16 **6 Claims**



1. An automatic equalization system having a transmitting equalizer at the transmission station, a receiving equalizer at the receiving station and a transmission line provided between the two stations, comprising a pilot signal generator provided at the input of the transmitting equalizer, means for detecting the level of the pilot signal at the output of the transmitting equalizer, means for detecting the level of the pilot signal at the input of the receiving equalizer, means for transmitting the signal relating to the detected level at the input of the receiving equalizer back to the transmitting station, and means for controlling the gain of the transmitting equalizer so that the sum of the detected level at the output of the transmitting equalizer and the detected level at the input of the receiving equalizer becomes a predetermined value.

4,201,960

METHOD FOR AUTOMATICALLY MATCHING A RADIO FREQUENCY TRANSMITTER TO AN ANTENNA

Frank R. Skutta, and Lee D. Tice, both of Palantine, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 24, 1978, Ser. No. 909,155
Int. Cl.[2] H03H *7/40*
U.S. Cl. 333—17 M **34 Claims**

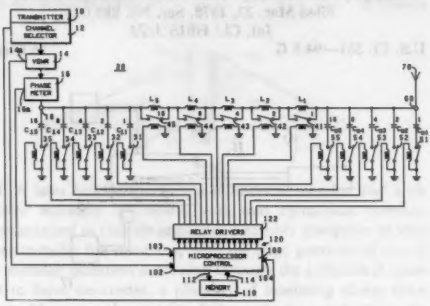
1. A method for matching the nominal real impedance of a transmitter to an antenna comprising the steps of:

(a) providing a first terminal adapted for connection to said transmitter;

(b) providing a second terminal adapted for connection to said antenna;

(c) providing a variable series inductance coupled between said first and second terminals;

(d) providing a variable shunt capacitance coupled to a predetermined one of said first and second terminals;



(e) predeterminedly controlling said inductance and capacitance in a first mode such that the impedance at said first terminal is substantially real having a value less than said nominal real impedance; and

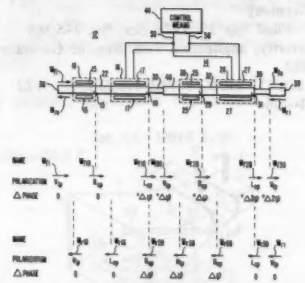
(f) predeterminedly varying said inductance and capacitance in a second mode to increase the real part of the impedance at said first terminal until it is within a predetermined range from said nominal impedance.

4,201,961

UNIDIRECTIONAL PHASE SHIFTER

Gerald I. Klein, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 16, 1978, Ser. No. 916,166
Int. Cl.[2] H01P *1/40*
U.S. Cl. 333—24.1 **7 Claims**



1. Variable phase change apparatus providing a fixed phase change for electromagnetic energy propagating therethrough in a first direction and a variable phase change in addition to said fixed phase change for electromagnetic energy propagating therethrough in a direction opposite said first direction, said electromagnetic energy being characterized by linear or circular polarization, said circularly polarized electromagnetic energy being characterized by first or second senses, said phase change apparatus comprising:

(a) first and second cascaded differential phasor sections each including:

(1) first and second converting means each of which for converting linearly polarized electromagnetic wave energy to circularly polarized energy and for converting circularly polarized electromagnetic wave energy to linearly polarized energy; and

(2) phase changing means interposed therebetween for reversing the sense of circularly polarized energy propagating therethrough in said first direction or said opposite direction and for effecting a nonreciprocal phase change for circularly polarized energy having said first sense and propagating therethrough in said opposite direction or having said first sense and propagating therethrough in said first direction; and

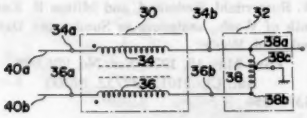
(b) means for coupling the first converting means of said first differential phasor to the second converting means of said second differential phasor.

4,201,962

INPUT TRANSFORMER ARRANGEMENT FOR USE IN A TELEVISION RECEIVER

Nobukazu Hosoya, Moriguchi, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 20, 1978, Ser. No. 953,082
Claims priority, application Japan, Oct. 20, 1977, 52-126970
Int. Cl.[2] H03H *7/38, 7/42*
U.S. Cl. 333—25 **8 Claims**



1. An input transformer arrangement for use in a television receiver, including an unbalanced signal suppress transformer for suppressing an unbalanced signal carried on at least one of a pair of lead wires constituting a feeder line extending between the television receiver and an antenna therefor, and an impedance transformer, said input transformer comprising:

a first coil having input and output ends;

a second coil having input and output ends, said first and second coils magnetically coupled to each other in such a manner as to match the phase sequence of the first coil with that of the second coil for forming a first transformer theretogether; and

a third coil connected between the output end of the first coil and output end of the second coil, said third coil having a center portion thereof grounded for forming a second transformer,

the first transformer adapted to suppress the unbalanced signal while the second transformer is adapted to reduce the impedance.

4,201,963

3-POSITION, 4-PORT WAVEGUIDE SWITCH

George R. Welti, Leesburg, Va., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Jan. 26, 1978, Ser. No. 872,709
Int. Cl.[3] H01P *1/12*
U.S. Cl. 333—106 **8 Claims**

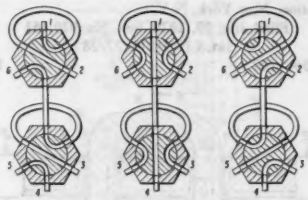
1. A rotary microwave switch for switching microwave signals comprising:

a rotary switch stator having six waveguide ports spaced at 60° intervals;

a rotor having six input ports spaced at 60° intervals and positioned to be simultaneously in communication with said six waveguide ports, respectively;

said rotor having a first connecting transmission means across the diameter of the rotor connecting two of said ports spaced 180° apart; and

said rotor further having a second and third connecting transmission means on each side of said first connecting



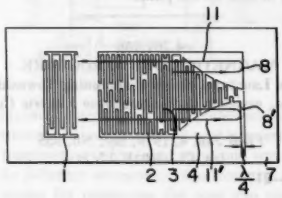
transmission means, each connected to two adjacent ones of said ports which are spaced 60° apart.

4,201,964

ELASTIC SURFACE WAVE DEVICE

Yoshihiko Noro, Kamakura; Katashi Hazama, Zushi; Jun Yamada, Yokohama; Hitoshi Yanagihara, Yokohama, and Michiyori Miura, Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 20, 1978, Ser. No. 917,220
Claims priority, application Japan, Jun. 20, 1977, 52-72056
Int. Cl.[2] H03H *9/04, 9/26, 9/32, 9/30*
U.S. Cl. 333—151 **6 Claims**

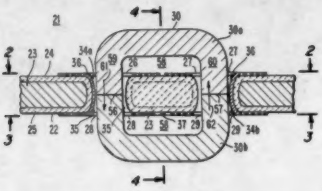


1. An elastic surface wave device comprising a substrate of a piezoelectric material serving as a medium of the propagation of an elastic surface wave and a plurality of interdigital transducers each including a pair of interleaved comb-like electrodes provided on said substrate, each of said comb-like electrodes having a plurality of fingers to be interleaved, wherein at least one of said interdigital transducers has an overlap-weighted pair of interleaved comb-like electrodes, those portions of overlapped fingers at ends of said overlap-weighted pair of interleaved comb-like electrodes which do not contribute to the overlap weighting being formed into unitary stem areas, those edges of said unitary stem areas of said interleaved comb-like electrodes of said at least one interdigital transducer which are perpendicular to the elastic surface wave propagating direction including a combination of at least one pair of partial edges, the positions of said partial edges in each of said at least one pair of partial edges differing by $(2n+1)$. $(\lambda/4)$ from each other in the elastic surface wave propagating direction, and the lengths of the partial edges in the said each pair of the partial edges being equal to each other, where n represents zero or a positive integer and λ represents the wavelength of the elastic surface wave.

4,201,965
INDUCTANCE FABRICATED ON A METAL BASE PRINTED CIRCUIT BOARD

Lubomyr S. Onyshkevych, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 29, 1978, Ser. No. 920,461
Int. Cl.[2] H01F *27/28*
U.S. Cl. 336—180 14 Claims



1. A high-Q inductance for a metallic base printed circuit board, comprising:

a printed circuit board metallic support base;

a ferromagnetic core placed through a first aperture in said metallic support base for providing a preferred path in said ferromagnetic core for time-varying magnetic flux;

an overlayer of insulating material deposited on said metallic support base for providing electrical insulation from said metallic support base;

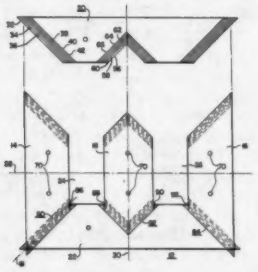
an electrically conductive printed coil structure deposited on said overlayer and located about said ferromagnetic core for generating said time varying magnetic flux,

said metallic support base including a gap extending outwardly from the vicinity of said first aperture in a manner that will intersect closed paths within said metallic support base that are linked by said time-varying magnetic flux for forming a high-Q inductance by substantially impeding across said gap the flow of dissipative eddy currents in said closed paths.

4,201,966
MAGNETIC CORE STRUCTURE

Angelo A. De Laurentis, South Pymatuning Township, Mercer County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 4, 1979, Ser. No. 935
Int. Cl.[2] H01F *27/24*
U.S. Cl. 336—217 2 Claims



1. A magnetic core comprising:

a plurality of stacked groups of layers of metallic laminations, each of said groups including a plurality of said layers;

each of said layers including first and second outer leg laminations and an inner leg lamination, each having first and second ends, and first and second yoke laminations forming a magnetic core having said outer and inner leg laminations connected by said yoke laminations and a plurality of outer and associated inner corners;

said yoke and said leg laminations having their ends cut diagonally to provide a closed magnetic circuit having diagonal joints between adjoining ends of said yoke and leg laminations;

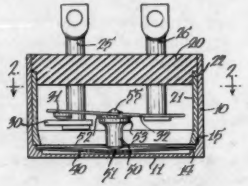
the length dimensions of said outer and inner leg laminations and said first and second yoke laminations progressively varying in opposite directions from layer to layer within each group, while the respective midpoints of each leg and yoke lamination are aligned to offset said diagonally cut ends of said leg and yoke laminations from layer to layer in a stepped pattern that progresses at least three steps in one direction;

the relative locations of said leg and yoke laminations in the direction of their diagonal cut ends being selected to divide the voids formed at said inner corners of said magnetic core by the intersection of said leg and yoke laminations uniformly between said leg and yoke laminations in each group of layers of laminations.

4,201,967
THERMAL SWITCH AND METHOD OF ASSEMBLY AND TOOL USED THEREIN

Ronald W. Romerdahl, Redmond, and Milton R. Knight, Rothwell, both of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Filed May 15, 1978, Ser. No. 906,099
Int. Cl.[2] H01H *37/52, 61/00*
U.S. Cl. 337—354 16 Claims

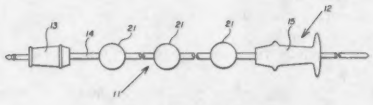


1. A thermal switch having a fixed contact, a movable contact, an armature spring carrying the movable contact, a thermally-responsive actuator spaced from and movable toward and away from the armature spring, a striker pin carried on the armature spring for transmitting actuating movement of the actuator to the armature spring, and a layer of adhesive between the striker pin and the armature spring for bonding thereof together and providing a controllable thickness layer to establish the effective length of the striker pin.

4,201,968
TEMPERATURE PROBE ASSEMBLY

Michael S. Parisi, and John A. Pauly, both of Milford, Mass., assignors to Walter Kidde & Co., Inc., Clifton, N.J.

Filed Aug. 16, 1978, Ser. No. 934,032
Int. Cl.[2] H01C *7/04*
U.S. Cl. 338—28 8 Claims



1. A temperature probe assembly comprising:

a probe adapted for insertion into food products, said probe comprising a temperature responsive sensor;

a coaxial cable having one end secured to said probe and

having electrically isolated inner and outer conductors connected to said temperature responsive sensor and an outer insulative sheath, said insulative sheath being discontinuous so as to create at a plurality of spaced apart locations on said cable insulation gaps in which a length of said outer conductor is exposed;

an insulative unit molded over said insulative sheath and covering each of said gaps, each of said insulative units being bonded intimately to each of said exposed lengths of said outer conductor, so as to cause severing thereof in response to a predetermined relative movement between the insulative unit bonded thereto and said insulative sheath; and

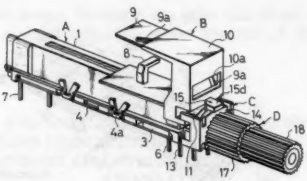
an electrical plug connected to the opposite end of said cable.

4,201,969

VARIABLE RESISTOR AND SWITCH ASSEMBLY

Masami Tanaka, and Yukihiko Nomura, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jun. 28, 1978, Ser. No. 919,801
Claims priority, application Japan, Jun. 28, 1977, 52-85117[U]
Int. Cl.³ H01C *10/40*
U.S. Cl. 338—180 **8 Claims**



1. In a combined variable resistor and switch assembly including a variable resistor section having a slider movable along a resistance element by means of a rotatable shaft operatively associated with said slider, and a rotary switch section coaxial with said shaft and having

a plate supporting a common terminal and a plurality of change-over terminals,

a frame held to said plate,

a movable contact formed of electrically conductive material and held between said terminal supporting plate and said frame,

an operation member adapted to rotate said movable contact so as to electrically connect said common terminal with a selected change-over terminal, the improvement comprising:

said frame having openings therein, and coacting means formed respectively on said movable contact and said operation member and having portions extending through said openings for rotating said movable contact by actuation of said operation member.

4,201,970

METHOD AND APPARATUS FOR TRIMMING RESISTORS

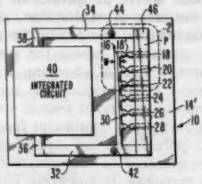
Lubomyr S. Onyshkevych, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,744
Int. Cl.² H01C *10/00*
U.S. Cl. 338—195 **8 Claims**

1. A method of trimming a resistor, to one end portion of which a first terminal is connected, to a value in a desired range comprising the steps of:

connecting between a common second terminal and N different points along the resistor N fusible links, respectively, each fusible link having a certain current carrying capacity and opening when that capacity is exceeded;

applying a constant voltage between said first and second terminals of a value such that at least the fusible link closest to said first terminal opens and a sufficient number of additional links, if any, burn out to cause the value of



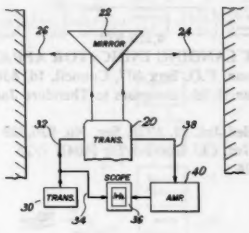
resistance present between said terminals to be within said desired range and the value of current flowing through any still intact fusible link to be lower than its current carrying capacity.

4,201,971

ULTRASONIC CENTERING APPARATUS

Robert Saglio, Antony, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 14, 1978, Ser. No. 896,306
Claims priority, application France, May 31, 1977, 77 16500
Int. Cl.² G01B *17/00*
U.S. Cl. 367—95 **4 Claims**



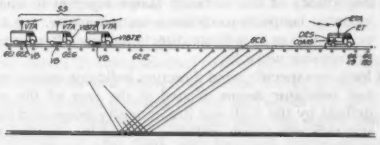
1. An ultrasonic centering apparatus, wherein it comprises at least one ultrasonic transducer placed within an enclosure, said transducer transmitting at least one ultrasonic wave, means for collecting the different ultrasonic echos from the walls of said enclosure, means for measuring the time gap separating the reception of the different echos and means for displacing the transducer or transducers until the different echos are received at the same time by said echo receiving means.

4,201,972

SEISMIC PROSPECTING SYSTEM

Charles M. Edwards, and J. Robert Fort, both of Pasadena, Calif., assignors to United Geophysical Corporation, Pasadena, Calif.

Continuation of Ser. No. 304,562, Nov. 7, 1972, abandoned. This application Oct. 28, 1977, Ser. No. 846,320
Int. Cl.² G01V *1/28*
U.S. Cl. 367—40 **71 Claims**



70. In a system for seismic surveying,

an improved seismic data acquisition system for acquiring and processing seismic data respecting subsurface formations during the course of exploring an area of the earth by generating seismic waves at seismic wave source areas and receiving such waves at spreads of geophone stations located in the area of exploration, after deflection by subsurface formations, comprising the combination of:

seismic wave generating means for generating trains of seismic source waves of changing frequency within a series of source areas adjacent the surface of the earth, each said train of generated seismic waves having a frequency that varies as a continuous function of time over an extended period and for supplying digital electrical signals representative of the generated seismic waves, such waves traveling downwardly into the earth being deflected upwardly by subsurface formations;

means for receiving corresponding trains of deflected seismic waves at respective spreads of geophone stations located in the area of exploration;

means for converting the respective trains of seismic waves received at the geophone stations into corresponding trains of digital electrical signals;

means for combining such sets of trains of digital electrical signals with such digital signals representative of the generated seismic waves to produce an ensemble of cross-correlated trains of waves representative of the deflection characteristics of formations encountered by the source waves; and

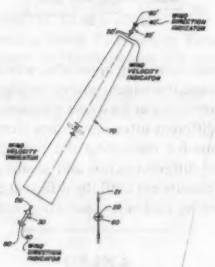
means for displaying an ensemble of such cross-correlated trains of seismic waves prior to receiving and correlating of later generated seismic waves during the course of such exploration.

4,201,973

AIRPORT LANDING INDICATOR APPARATUS

Theodore Jackson, P.O. Box 407, Council, Id. 83612, and Ken Johnson, Council, Id., assignors to Theodore Jackson, Council, Id.

Filed Jul. 21, 1978, Ser. No. 926,629
Int. Cl.[2] G08G 5/00; H04B 7/26
U.S. Cl. 340—26 **2 Claims**



1. Airport landing indicator apparatus comprising:

wind direction monitoring means;

at least two runway locator means, each of said locator means disposed at opposing ends of a runway and each of said locator means including

a multiplicity of high intensity lamps set in such configuration as to define an arrow and

a multiplicity of low intensity lamps adjacent to said high intensity lamps as to define a second arrow, the arrows oriented so as to indicate directional aircraft approach to the runway when lit;

at least two specific wind direction indicator means, each of said indicator means located at the rear of the arrows defined by the high and low intensity lamps and each of said indicator means including at least two lamps adapted to indicate approximate wind direction; and

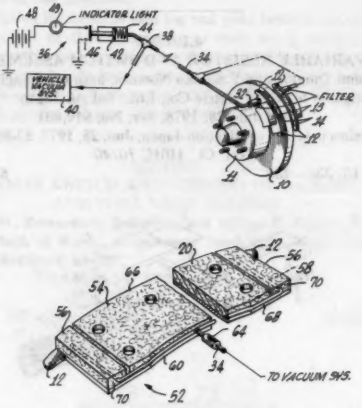
switch means controlled by said wind direction monitoring means and operable to provide electricity from an external power source to light the lamps of a selected locator means and a selected specific wind direction indicator means dependent upon wind direction.

4,201,974

BRAKE APPARATUS WITH AIR ACTUATED REMOTE WEAR INDICATOR

Raoul G. Fima, Van Nuys, Calif., assignor to Jumpak Products Inc., Anaheim, Calif.

Filed Aug. 29, 1977, Ser. No. 828,817
Int. Cl.[2] B60Q 1/44
U.S. Cl. 340—52 A **6 Claims**



1. A brake apparatus including a rotatable member connected to a wheel of a vehicle for rotation therewith, a non-rotatable brake shoe disposed adjacent said rotatable member, means for moving said brake shoe toward said rotatable member to apply a braking force to said wheel, a friction pad having a predetermined working thickness and subject to wear, and means for securing said pad to said shoe, wherein the improvement comprises:

an aperture in said pad;

an aperture in said shoe aligned with said aperture in said pad;

an insert at least as subject to wear as said pad disposed within said apertures, said insert having a closed end defining an interruption level at which said rotatable member will form a hole therein as said pad wears, said interruption level being within said working thickness,

an air conduit one end of which is attached to said insert so that said insert forms a closed end on said conduit;

means for normally maintaining said conduit at an air pressure level different from atmospheric pressure; and

indicator means connected to said conduit for producing a visible indication of the need to replace said pad in response to a change in air pressure in said conduit.

4,201,975

DISPLAY DEVICE

Herbert Marcus, 635 Redding Rd., West Redding, Conn. 06896

Filed Oct. 12, 1977, Ser. No. 841,561
Int. Cl.[2] B60Q 7/00; E01F 9/00, 9/01
U.S. Cl. 340—84 **17 Claims**

1. A display device comprising a relatively flat base, and including a plurality of outwardly directed arms extending from the base, each of said arms terminating in a support leg for the base, said arms arranged in pairs with each pair including a

short arm and a long arm; a staff supported by said base; said base further including means for receiving one end of said staff;

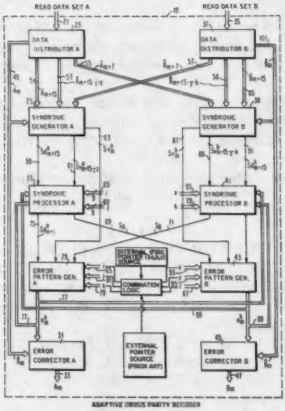
and a signal device, located at the other end of said staff, for providing a visual indication of the presence of the display device.

4,201,976

PLURAL CHANNEL ERROR CORRECTING METHODS AND MEANS USING ADAPTIVE REALLOCATION OF REDUNDANT CHANNELS AMONG GROUPS OF CHANNELS

Arvind M. Patel, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,653
Int. Cl.[2] G06F 11/12
U.S. Cl. 371—50 **14 Claims**



1. In combination: a parallel multi-channel data handling system (FIG. 1–3, 5, 7), the channels (FIG. 6) being partitioned into a first and second set; means for ascertaining channels in error externally and generating pointer signals (i,j,k,x,y,z); and apparatus (9, 19) for correcting up to three channels in error in any one set, the other set having no more than one channel in error; said apparatus comprising:

means (9) for encoding and writing into a first channel in each set vertical parity checks limited to that set;

means (9, 193–207, FF1–FF7) for encoding and writing into a second channel of each set parity checks taken over both sets of channels in a predetermined positively or negatively sloped direction;

means (25, 27, FIGS. 7 and 8) for determining syndromes (Sv_m^a, Sv_m^b, Sd_{m+i}^a, Sd_{m+x}^b, S_A, S_B) from the parity checks and data written into the channels;

means (29, FIG. 10) responsive to the external pointer signals designating at least one known channel in error for generating correction signals (e_m^a, e_m^b) from at least two syndromes intersecting the same error in the known error channel; and

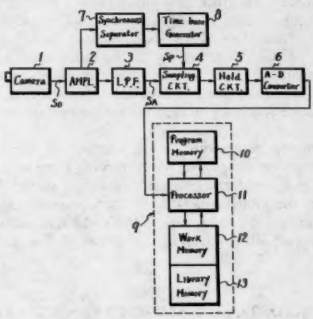
means (31, FIG. 11) for correcting said errors by logically combining the correction signals (e_m^a, e_m^b) with the original known channel data (A_m, B_m).

4,201,977

DATA PROCESSING AND STORAGE SYSTEM USING FILTERING AND SAMPLING TECHNIQUES

Toshiyuki Shimizu, Tokyo, Japan, assignor to Hajime Industries, Ltd., Japan

Continuation-in-part of Ser. No. 721,765, Sep. 9, 1976, abandoned. This application Mar. 30, 1978, Ser. No. 891,913
Claims priority, application Japan, Sep. 18, 1975, 50-113358
Int. Cl.[2] G06K 9/02
U.S. Cl. 340—146.3 H **7 Claims**

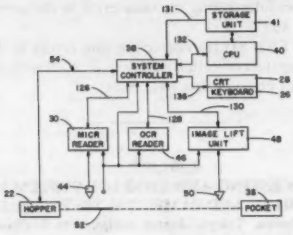


1. An information signal processing system for use with a pattern recognition system which has means (1) for converting an information signal of an object to be recognized into an electrical signal (S_O), means (7) for receiving the electrical signal from said converting means and producing horizontal and vertical synchronizing signals from the electrical signal and producing a sampling signal (S_P), means (4) for sampling said electrical signal from said converting means controlled by said sampling signal and means (9) for sequentially comparing output signals from said sampling means with reference signals, said information signal processing system being characterized in that said sampling signal producing means comprises means (8) receiving the vertical synchronizing. signal (S_V) and producing a plurality of sampling signals (S_P) in one period between adjacent vertical synchronizing signals, and filtering means (3) provided which receives the electrical signal (S_O) from said converting means and produces an envelope signal (S_A) which is approximately equal to said electrical signal (S_O) from said converting means and supplies its output to said means (4) for sampling, the filtering characteristic of said filtering means (3) being selected so as to smooth said electrical signal (S_A) from said converting means during at least more than one horizontal scanning period, said signal (S_A) from said filtering means being supplied to said sampling means, and said sampling signals (S_P) from said sampling signal producing means (8) being also supplied to said sampling means to determine its sampling time within one period.

4,201,978
DOCUMENT PROCESSING SYSTEM

Robert B. Nally, Waterloo, Canada, assignor to NCR Canada Ltd. — NCR Canada Ltee, Mississauga, Canada

Filed Oct. 19, 1978, Ser. No. 953,046
Int. Cl.[2] G06K *9/04*
U.S. Cl. 340—146.3 C **6 Claims**



1. A system for processing documents encoded with alpha-numeric characters and containing human readable characters comprising:

(a) storage means;

(b) utilization means;

(c) means for generating data including keyboard means for entering into said storage means the encoded alpha-numeric characters on the document and data locating the human readable characters on the document, said data being stored in said storage means at an address represented by the encoded alpha-numeric characters;

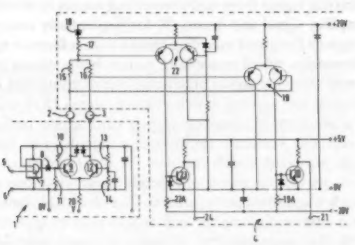
(d) means for reading encoded alpha-numeric characters on a document being processed;

(e) and means responsive to the reading of the encoded alpha-numeric characters for retrieving from said storage means and transferring to said utilization means the data locating the human readable characters on the document stored in said storage means at the address represented by the encoded alpha-numeric characters.

4,201,979
CONVEYING DATA SIGNALS BETWEEN RELATIVELY ROTATABLE UNITS

John R. Baron, London, England, assignor to British Aircraft Corporation Limited, London, England

Filed Jul. 24, 1978, Ser. No. 927,181
Claims priority, application United Kingdom, Jul. 27, 1977, 31457/77
Int. Cl.[2] G08B *29/00*; G08C *9/00*; G08B *21/00*
U.S. Cl. 340—181 **7 Claims**

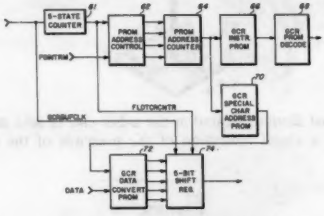


1. Apparatus for carrying a binary digital input signal having first and second logic levels between relatively rotatable first and second units, comprising; first and second wiping connectors for carrying current between the relatively rotatable first and second units; means responsive to the existence of the first or the second logic level in the binary dititat input signal to pass a current through the first or the second wiping connector, respectively, from the first unit to the second unit; output means responsive to current flow to the second unit through the first or the second wiping connector to generate an output signal having a first or a second logic level, respectively, and means responsive to the absence of current in both wiping connectors, when the apparatus is in operation, to provide an indication of a fault.

4,201,980
GCR DATA WRITE CONTROL APPARATUS

Stanley I. Friedman; Charles P. Cobeen, both of Phoenix, and Herbert K. Jacobsthal, Scottsdale, all of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 26, 1978, Ser. No. 973,260
Int. Cl.[2] H03K *13/24*
U.S. Cl. 340—347 DD **10 Claims**



1. A GCR write control apparatus for use in a data processing system wherein raw data is group coded recorded prior to being written on magnetic tape, comprising:

first memory means for storing a plurality of instructions;

second memory means for storing a special character table and a code conversion table for converting raw data into GCR data;

first addressing means for accessing said first memory means;

second addressing means for accessing said second memory means, said second addressing means coupled to the output of said first addressing means and to a source of raw data;

transmitting means coupled to the output of said second memory means and synchronized with said raw data for transmitting special characters and converted data to said magnetic tape; and

control means for incrementing said first addressing means.

4,201,981
DEVICE FOR THE DISPLAY OF DATA REPRESENTATIVE OF QUANTITIES

Jean L. Grissonnanche, Le Pecq, France, assignor to Societe Francais d'Equipements pour la Navigation Aerienne, Velizy-Villacoublay, France

Filed May 11, 1978, Ser. No. 904,751
Claims priority, application France, May 18, 1977, 77 15337
Int. Cl.[2] G08B *5/00*
U.S. Cl. 340—380 **8 Claims**

1. A system for indicating values, such as the values of command in a process or in a system of automatic piloting of an aircraft, comprising:

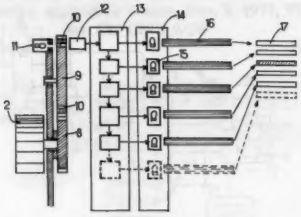
(a) a manual element, such as a rotatably mounted knob, for commanding an indicator;

(b) means, responsive to the action effectuated on said manual element, for transforming the information into a succession of pulses;

(c) means for counting said pulses;

(d) an indicator means, responsive to said counting means and comprising a luminous index having graduations along its length to indicate an output reading, and where

the output reading is a function in amplitude of the count in said counting means and in direction of the direction of action effectuated on said manual element, whereby an



indication is supplied to the operator through the intermediary of the manual element, with the indication being comparable to a reference for an output reading.

4,201,982

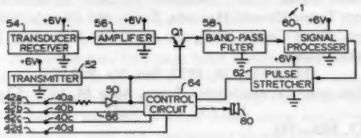
FOUR WIRE MULTI-SATELLITE INTRUSION ALARM WITH MULTIPLEX ANNUNCIATION

Peter E. Humphries, King, Canada, assignor to Contronic Controls Limited, Mississauga, Canada

Continuation-in-part of Ser. No. 770,867, Feb. 22, 1977, Pat. No. 4,138,674. This application Apr. 20, 1978, Ser. No. 898,238

Int. Cl.[2] **G08B** *29/00*

U.S. Cl. 340—506 **11 Claims**



1. An intrusion alarm system comprising:

(1) a master control unit having:

(a) two master power supply terminals, and power supply means coupled thereto for supplying power to said master power supply terminals,

(b) a master drive signal terminal, and a drive signal generator coupled thereto for applying a drive signal to said master drive signal terminal,

(c) a master alarm signal terminal, and a detector coupled thereto and responsive to receipt of a predetermined high level first alarm signal thereat for generating a second alarm signal,

(2) a plurality of satellite units, each having:

(a) a satellite drive signal terminal, and a transmitter coupled thereto and responsive to receipt of said drive signal thereat for transmitting a radiation field in a supervised area,

(b) a receiver for receiving a portion of said radiation field which is reflected from objects in said area,

(c) signal processing means coupled to said receiver for comparing the transmitted and received fields and responsive to disturbances in said received field caused by a moving intruder in the supervised area, for generating a third alarm signal upon occurrence of such disturbance,

(d) a satellite alarm signal terminal,

(e) a control circuit coupled to said signal processing means and to said satellite alarm signal terminal and responsive to receipt of said third alarm signal for generating said high level first alarm signal at said satellite alarm signal terminal,

(f) enable means responsive to receipt of said third alarm signal and operative for thereupon producing an enable signal,

(g) two satellite power receiving terminals for receiving power and coupled to said transmitter, said receiver, said signal processing means, and said control circuit for supplying power thereto,

(3) a cable having only four wires connecting each satellite unit to said master control unit, two of said wires being connected between said master power supply terminals and said satellite power receiving terminals, a third of said wires being connected between said master drive signal terminal and said satellite drive signal terminal, and the fourth of said wires being connected to said master alarm signal terminal and said satellite alarm signal terminal,

(4) each satellite further having:

(h) satellite counter means, and means connected between said satellite counter means and said control circuit for enabling said satellite counter means upon production of said enable signal and subsequent termination of application of said drive signal to said satellite drive signal terminal,

(i) said satellite counter means including means connected with said satellite drive signal terminal and responsive, when said counter means has been enabled, to receipt of a high level counting signal at said satellite drive signal terminal for causing said satellite counter means to count,

(j) said satellite counter means having an output corresponding to a selected count of said counter means said selected count being different from that of each counter means of each other satellite,

(k) said satellite counter means further including means connected to said satellite alarm signal terminal for generating, if said counter means has been enabled, a short duration high level fourth alarm signal at said selected count of said satellite counter means, the duration of said high level fourth alarm signal being not greater than the duration of a count of said satellite counter means,

(5) each master control unit further having:

(d) master counter means coupled to said master drive signal terminal for generating said high level counting signal at said master drive signal terminal, said high level counting signal having a count for each satellite,

(e) control means coupled to said master drive signal terminal and to said master counter means and selectively operable to discontinue application of said drive signal to said master drive signal terminal and to then initiate operation of said master counter means for application of said high level counting signal to said master drive signal terminal,

(f) said control means including means for terminating operation of said master counter means after said master counting means has generated a selected number of counts, said selected number being at least equal to the total number of said satellites,

(6) and satellite status indicating means comprising:

(a) register means having a plurality of indicating outputs, one corresponding to each satellite;

(b) said register means including means connected to said alarm signal terminal and to said master counter means and responsive to receipt of said fourth high level alarm signal during a selected number of said master counter means for generating an indicating signal at the indicating output corresponding to the satellite associated with said selected count,

(c) and indicating means connected to said register means and responsive to said indicating signals for indicating the status of said satellites,

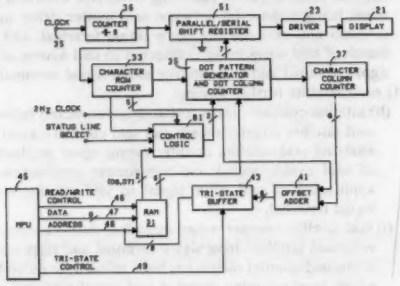
whereby an investigator inspecting said register means may determine which if said satellites has or has not generated a said high level first alarm signal.

4,201,983

ADDRESSING CIRCUITRY FOR A VERTICAL SCAN DOT MATRIX DISPLAY APPARATUS

Richard A. Magerl, Schaumburg; George E. Dykas, Vernon Hills, and Kenneth W. Hamilton, Rolling Meadows, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 2, 1978, Ser. No. 882,691
Int. Cl.[2] G06F 3/14
U.S. Cl. 340—709 **3 Claims**



1. An addressing circuitry for a column-wise scanning dot matrix display having R character rows and Q character columns where either R or Q or both are not equal to 2n wherein R, Q and n are integer numbers, respectively, said addressing circuitry comprising:

a clock source for generating timing signal pulses,

a random access memory for storing information in binary character codes wherein said memory has at least X character locations, X being equal to R times Q, and said information in binary character codes are stored in continuum,

a character row counter responsive to the timing signal,

a character column counter responsive to the timing signal,

means for providing addressing signal to said random access memory to read out the binary characters stored therein, said random access memory responsive to the addressing signal for reading out the stored binary characters,

a dot pattern generator for converting the binary-coded characters read out of the random access memory into dot matrix pattern characters, and

an off-set adder coupled between said character row counter and said character column counter and said random access memory, wherein said row and column counters, and said off-set adder are arranged to provide a unique offset to the addressing signal for enabling said addressing means to address and read out said random access memory so that the information in binary character codes stored in continuum are read out in a proper sequence and displayed in a dot matrix form on said dot matrix display panel in a proper sequence.

4,201,984

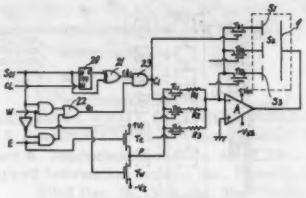
CURRENT CONTROLLED DRIVE SYSTEM FOR ELECTROCHROMIC DISPLAYS OF THE SEGMENTED TYPE

Yasuhiko Inami, Tenri; Sadatoshi Takechi, Nara; Tadanori Hishida, Kashihara; Hisashi Uede, Wakayama, and Hiroshi Take, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1977, Ser. No. 800,009
Claims priority, application Japan, May 24, 1976, 51-60958
Int. Cl.[2] G06F 3/14
U.S. Cl. 340—763 **14 Claims**

1. In a circuit for an electrochromic display which includes an electrochromic material and a predetermined number of display segments, various combinations of the display segments defining different desired display patterns, the improvement comprising:

a current supply source means connected to the electrochromic display; and



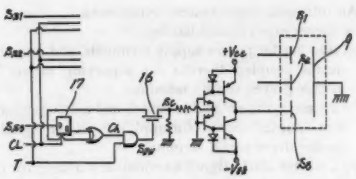
control means for selecting a constant value of the output current of said current supply source corresponding to the number of display segments which are to have their display states changed.

4,201,985

CONSTANT CURRENT SUPPLY DRIVE FOR ELECTROCHROMIC DISPLAYS OF THE SEGMENTED TYPE

Yasuhiko Inami, Tenri; Tadanori Hishida, Kashihara; Kozo Yano, Tenri; Hiroshi Hamada, Tenri, and Hiroshi Nakauchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1977, Ser. No. 800,008
Claims priority, application Japan, May 24, 1976, 52-60959
Int. Cl.[2] G09F 9/32
U.S. Cl. 340—785 **18 Claims**



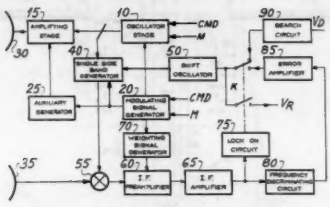
1. In a driver circuit for an electrochromic display which includes an electrochromic material and a predetermined number of display segments, combinations of the display segments defining different desired display patterns, the improvement comprising:

a plurality of constant current supply source means one of said constant current supply source means being connected to each of the respective display segments for causing an electric current of an individually fixed value to flow through said display segments; and control means for selectively enabling each of said constant current supply source means thereby causing electric current of a fixed value to be drawn through said constant current supply source means connected to said display segment and drawn from the respective display segment when said respective display segment is desired to be colored and causing electric current of a fixed value to be poured into the display segment and conducted through said constant current supply source means connected to said display segment when said display segment is desired to be bleached.

4,201,986
CONTINUOUS WAVE RADAR EQUIPMENT

Paul Ducrocq, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 3, 1978, Ser. No. 958,342
Claims priority, application France, Nov. 8, 1977, 77 33612
Int. Cl.[2] G01S 9/24
U.S. Cl. 343—14 **11 Claims**

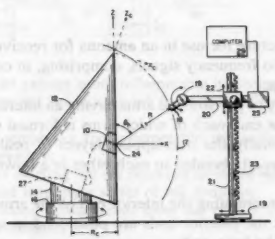


1. A radar equipment operating with a virtually continuous wave and comprising a transmitter/receiver assembly, the transmitter being formed by an oscillator stage whose frequency can be modulated, said oscillator stage being associated with a power amplifier stage, the receiver being of the superheterodyne type and in particular the multi-channel superheterodyne type which enables the echo of a target to be tracked directionally, wherein said transmitter/receiver assembly is capable of operating in two separate modes, namely a first mode in which the transmitted carrier wave F_o is frequency modulated linearly over a range ΔF, and a second mode in which the carrier wave is pure, said transmitter further including means for modulating said oscillator stage linearly through a sawtooth pattern signal whose repetition period is T_R, said receiver further including, on the one hand, at least one amplification channel whose final pass band is substantially equal to the reciprocal of the period T_R and whose gain is weighted periodically at this same rate T_R, and, on the other hand, a generator which supplies a local microwave signal whose phase is coherent with the transmitted signal and whose frequency is shifted by an amount equal to the intermediate amplification frequency plus the beat frequency F_b resulting from the transit time of the echo and the Doppler frequency shift.

4,201,987
METHOD FOR DETERMINING ANTENNA NEAR-FIELDS FROM MEASUREMENTS ON A SPHERICAL SURFACE

Gus P. Tricoles, San Diego, and Eugene L. Rope, El Cajon, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1978, Ser. No. 883,430
Int. Cl.[2] G01R 29/10
U.S. Cl. 343—703 **4 Claims**



1. The method for determining the field distribution at any point about a radiating antenna from measurements on a spherical surface comprising:

radiating a signal from a transmitting antenna to be measured;

receiving the radiated signal at a preselected range defining a spherical surface about the radiating antenna;

measuring the phase and intensity of the received signal;

reconstructing the near-field of the radiating antenna using the conjugate of the measured phase and intensity of said received signal by computing the field at any point within the measurement sphere, including the radiating aperture according to the equation,

$$u_i^* = \int \left(u_h^* \frac{\partial g}{\partial n} - g \frac{\partial u_h^*}{\partial n} \right) dS_o;$$

determining the spectrum of the reconstructed near-field within the measurement sphere by Fourier transformation according to the equation,

$$u_i = \int\int u_i^* e^{-i} d_y d_z^{\frac{2\pi(vz+\mu y)}{}};$$

filtering said spectrum by multiplying with filter functions, $1+(1-V^2)^{-\frac{1}{4}}$ and $1+(1-V^2)^{\frac{1}{4}}$, to enhance its accuracy;

analytically continuing said filtered spectra by extending the spectra beyond the conventional limit of $1/\lambda$, where λ is the wavelength to further enhance its accuracy; and

computing the fields within the measurement surface including the field at the radiating antenna aperture by inverse Fourier transformation of said filtered and continued spectra according to the inverse of equation,

$$u_i = \int\int u_i^* e^{-i} d_y d_z^{\frac{2\pi(vz+\mu y)}{}}$$

to provide accurate near-field data which may be used to calculate accurate far-fields of said radiating source.

4,201,988
WIDEBAND VHF ANTENNA

Douglas M. Dilley, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 5, 1979, Ser. No. 17,749
Int. Cl.[2] H01Q 1/32
U.S. Cl. 343—715 **16 Claims**

1. A wideband VHF antenna operable simultaneously on multiple frequencies comprising:

an elongated dielectric antenna whip having first and second ends;

a first electric conductor of length L1 secured to said dielectric whip and extending substantially along the entire length thereof;

a second electric conductor of length L1 secured to said

dielectric whip and extending substantially along the entire length thereof;

a first electric connector connecting said first electric conductor to said second electric conductor;

a third electric conductor of length L2 secured to said dielectric antenna whip and disposed in the neutral plane between said first and second electric conductors;

a second electric connector connecting said second electric conductor to said third electric conductor; and

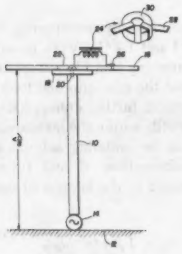
a wideband transformer connected to said first electric conductor.

4,201,989

WIDEBAND ANTENNA WITH FREQUENCY DEPENDENT FERRITE CORE INDUCTOR

Watson P. Czerwinski, Forked River, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 11, 1979, Ser. No. 28,934
Int. Cl.[2] H01Q *1/32, 9/38*
U.S. Cl. 343—715 **14 Claims**



1. A low profile wideband antenna system coupled to radio apparatus operable over a predetermined frequency range and adapted for VHF operation, comprising in combination:

a counterpoise;

an end fed monopole antenna element mounted on said counterpoise;

a top capacitance loading element located at the opposite end of said antenna element from said counterpoise; and

a frequency dependent series inductor coupled between said antenna element and said top capacitance loading element, said frequency dependent series inductor including a winding wound on a core of ferrite material which material exhibits a μ characteristic which decreases with respect to frequency over a predetermined portion of said frequency range.

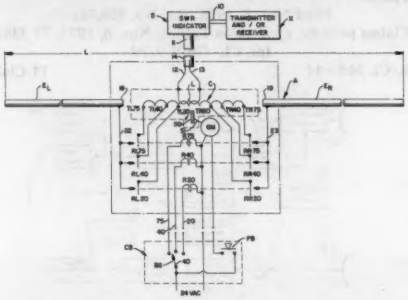
4,201,990

TUNABLE DIPOLE ANTENNA

John Altmayer, Cape Coral, Fla., assignor to Hustler, Inc., Kissimmee, Fla.

Continuation-in-part of Ser. No. 569,794, Apr. 21, 1975, abandoned. This application Jul. 22, 1977, Ser. No. 818,009
Int. Cl.[2] H01Q *9/16*
U.S. Cl. 343—747 **11 Claims**

1. A remotely, tuned, band-switched dipole antenna comprised of a single pair of elongated dipole elements in aligned relationship with their adjacent ends in electrically insulated relationship, a multi-turn coil of electrically conductive material positioned adjacent said adjacent ends, said coil having at least a pair of spaced taps, one on each side of its center plane, means connecting a pair of said taps to respective adjacent ends of said dipole members, a disc of a material to affect the inductance of said coil positioned within said coil midway between the ends of said coil and rotatable about a diameter of said coil from a first position where the plane of said disc is perpendicular to the axis of said coil to a second position, motor means for rotating said disc between said positions and means remote from said antenna for actuating said motor whereby said antenna may be electrically tuned from a remote



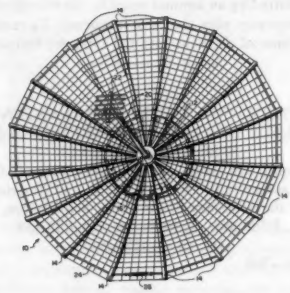
point; said means for connecting said taps on said coil to said adjacent ends of said dipole elements including relays having contacts thereon and means for selectively energizing said relays.

4,201,991

ANTENNA STRUCTURE ASSEMBLED FROM SEPARABLE PARTS

James K. Vines, Park Forest South, Ill., assignor to Paraframe, Inc., Monee, Ill.

Filed Mar. 16, 1978, Ser. No. 887,354
Int. Cl.[2] H01Q *15/20, 19/12*
U.S. Cl. 343—840 **5 Claims**



1. A structure for use in an antenna for receiving or broadcasting radio frequency signals, comprising, in combination:

a flat base;

a plurality of pre-stressed arms having an interior end and an exterior end, each of which arms is formed of a plurality of generally flat overlapping layers of resilient material permanently bonded to each other in a bowed configuration;

means for mounting the interior end of the arms to the base, so that the exterior ends are positioned in a radial array about the base; and

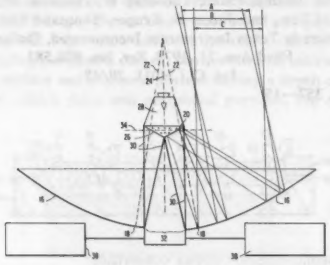
cable means mounted about said arm ends for securing together said plurality of arms in a radiating array about the base together and for stressing the arms into a generally parabolic shape.

4,201,992

MULTIBEAM COMMUNICATIONS SATELLITE

George R. Welti, Leesburg, Va., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Apr. 20, 1978, Ser. No. 898,051
Int. Cl.[2] H01Q *1/28*
U.S. Cl. 343—840 **5 Claims**



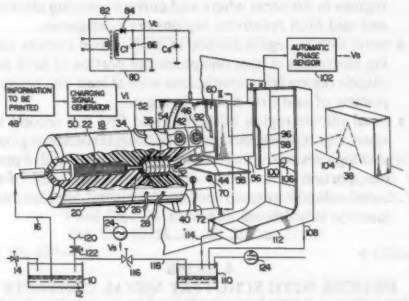
1. In a multibeam communications satellite of the type having an antenna which comprises a reflector and a plurality of feeds for directing radiation at different areas of the surface of said reflector for redirection to various points on earth, the improvement comprising said reflector surface being described by a plane parabolic generating curve rotated about an axis of revolution which is coplanar with said generating curve but angularly displaced from the axis of symmetry thereof by an angle of less than 12°.

4,201,993

INK JET PRINTER USING INFLAMMABLE INK

Syoichi Ito, Ibaraki, and Mithuo Suzuki, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 22, 1978, Ser. No. 972,216
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 **5 Claims**



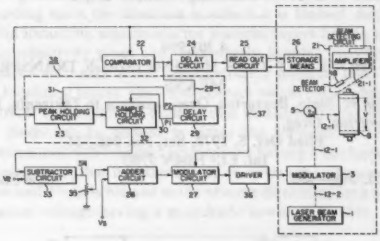
1. An ink jet printer using inflammable ink comprising:
an ink reservoir for storing ink including inflammable solvent;
means for supplying the inflammable ink under predetermined pressure;
a nozzle for ejecting the ink received from the ink supplying means and forming a series of ink droplets;
means mounted downstream from the nozzle for charging each ink droplet;
charging signal generator for producing a voltage signal in accordance with information to be printed to determine an amount of charge to be imparted to each ink droplet and for supplying the charging means with the voltage signal;
a pair of deflecting plates mounted downstream from the charging means for deflecting the charged ink droplets, the value of the capacitance is so selected that the electrostatic energy stored betwen the plates when a predetermined d.c. voltage is supplied thereto, is less than the minimum spark ignition energy of the inflammable ink vapor occured in operation;
an electric source for supplying the deflecting plates with the predetermined d.c. voltage;
an insulating support for supporting the deflecting plates;
a resistor connected between the deflecting plates and the electric source, the value of the resistance is so selected that the spark ignition energy discharged when the spark ignition occurs between the deflecting plates, is less than the minimum spark ignition energy.

4,201,994

INFORMATION FORMATION APPARATUS

Kazuo Hoshito, Kawasaki; Hideaki Sato, Yokohama; Takashi Kitamura, Yokohama, and Koichi Masegi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1977, Ser. No. 833,342
Claims priority, application Japan, Sep. 17, 1976, 51-111563
Int. Cl.[2] G01D *15/14*
U.S. Cl. 346—108 **18 Claims**



1. An information formation apparatus for forming information on a beam-irradiated member by the use of a beam, comprising:
beam formation means for forming a beam modulated by information signals applied thereto;
deflector means for deflecting said beam in accordance with a scan pass;
an information formation member on which the beam deflected by said deflector means is projected, said information formation member having an information formation region on which information is formed by said beam;
means for detecting the intensity of said beam at a predetermined time other than the time when said beam scans said information formation region, and producing a detection signal in accordance with the intensity of said beam;
peak holding means for detecting and holding the maximum level in said detection signal; and
comparison means for comparing said maximum level with a reference level and producing a control signal in accordance with a difference therebetween.

4,201,995

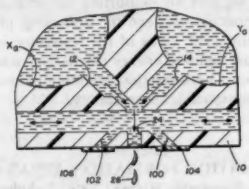
COINCIDENCE GATE INK JET WITH INCREASED OPERATING PRESSURE WINDOW

Kenneth H. Fischbeck, Dallas, and Ganesh L. Harpavat, Plano, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1978, Ser. No. 966,436
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R **18 Claims**

1. A coincidence gate ink jet comprising: an outlet orifice, a first transducer chamber, a second transducer chamber, first passage means communicating said first transducer chamber to said orifice, second passage means communicating said second

transducer chamber to said orifice, said first and second passage means intersecting each other adjacent said orifice, the axis of each of said first and second passage means at said intersection being at an angle with the axis of said orifice, pressure absorbing chamber means communicated with said orifice and intersection, means for allowing fluid displacement in said absorbing chamber means when only one transducer is



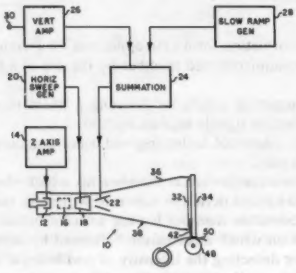
actuated, said pressure absorbing chamber means being so designed and arranged relative to said intersection and said orifice that the minimum pressure required to express a droplet through said orifice upon actuation of only one of said transducers will be increased compared to the minimum pressure required to express a droplet from the orifice of a similar ink jet structure without the absorbing chamber means.

4,201,996

CATHODE RAY TUBE HAVING IMAGE TRANSFER MEANS

William W. Stein, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 5, 1978, Ser. No. 948,724
Int. Cl.[2] H04N *5/80*
U.S. Cl. 346—158 **4 Claims**



1. A display and recording system comprising:

a cathode ray tube including an electron gun for generating a writing beam of electrons, deflection means for deflecting said writing beam in accordance with input signals that are applied thereto, and a faceplate having a phosphor screen thereon for visually displaying information thereon corresponding to the deflection thereon of said writing beam by said deflection means;

image transfer means disposed along said faceplate, said image transfer means defining a first section and a second section, said first section located inside said cathode ray tube and having a portion covered by a part of said phosphor screen, said second section extending along an edge of said faceplate outside said cathode ray tube and remote from said visual display;

recording means for passage along and in engagement with said second section of said image transfer means; and

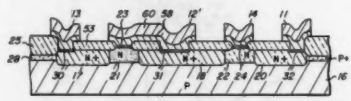
means operatively connected to said deflection means for selectively deflecting said writing beam along said part of said phosphor screen to scroll the visually displayed image line by line along said part and transfer the line by line image via said image transfer means to provide a permanent said recording means to record of the visually displayed information thereon.

4,201,997

MESFET SEMICONDUCTOR DEVICE AND METHOD OF MAKING

Henry M. Darley, Plano; Theodore W. Houston, Richardson, both of Tex., and James B. Kruger, Thousand Oaks, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 21, 1978, Ser. No. 898,582
Int. Cl.[2] H01L *29/48*
U.S. Cl. 357—15 **6 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

first, second, and third current carrying electrodes of the opposite conductivity type in surface adjacent regions of said substrate;

a first high resistivity region of said opposite conductivity type in a surface adjacent region of said substrate and between and contiguous with at least one perimeter portion of said first and second current carrying electrodes;

a second high resistivity region of said opposite conductivity type in a surface adjacent region of said substrate and between and contiguous with at least one perimeter portion of said second and third carrying electrodes;

a first dielectric region in said substrate surrounding said device;

a heavily doped region of said first conductivity type lying below and in contact with said first dielectric region;

a second dielectric region in said substrate lying between said first dielectric region and overlying part of each of said current carrying electrodes and said high resistivity regions in the areas where said current carrying electrodes and said high resistivity regions are contiguous;

a metal silicide region formed in each of said current carrying electrodes at least one perimeter portion of each metal silicide region lying contiguous with at least one perimeter portion of said first dielectric region;

a metal silicide region in each of said first and second high resistivity regions, the ends of said metal silicide regions in said high resistivity regions lying contiguous with a perimeter portion of said first dielectric region, each of said metal silicide regions creating a metal-semiconductor junction as a control element.

4,201,998

DEVICES WITH SCHOTTKY METAL CONTACTS FILLING A DEPRESSION IN A SEMI-CONDUCTOR BODY

Alfred Y. Cho, Summit, and Martin V. Schneider, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 770,014, Feb. 18, 1977, Pat. No. 4,108,738. This application May 30, 1978, Ser. No. 910,118
Int. Cl.[2] H01L *29/48*
U.S. Cl. 357—15 **1 Claim**

1. A semiconductor device comprising:

(a) a GaAs substrate doped with Sn to a concentration on the order of $10^{18}cm^{-3}$;

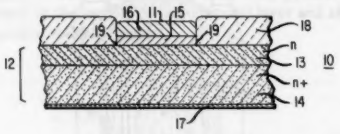
(b) an ohmic contact disposed on a major surface of said substrate;

(c) a GaAs epitaxial layer about 1500A thick disposed on an opposite major surface of said substrate and being doped

with Sn to a concentration with abruptly changes from about $10^{18}cm^{-3}$ at the interface with said substrate to the order of $10^{16}cm^{-3}$ in said epitaxial layer and decreases with distance from said interface to the free surface of said layer;

(d) a passivating layer disposed on said free surface and having an aperture therein to expose a portion of said epitaxial layer;

(e) a depression in said epitaxial layer underneath said aperture extending under at least a portion of said passivating layer, said depression having a generally curved profile including peripheral curved portions which intersect said free surface and a central portion having a depth of about 400A which joins said peripheral portions, the distance



between said central portion of said depression and said interface being sufficiently small to allow voltage punch-through under conditions of reverse bias, the carrier concentration in said epitaxial layer decreasing from about $4\times10^{16}cm^{-3}$ at a depth of about 400A from said free surface to about $3\times10^{16}cm^{-3}$ at said free surface, the carrier concentration near said free surface being sufficiently small to prevent breakdown at the intersection of said curved portions with said free surface under conditions of reverse bias, and

the curved shape of said depression and the carrier concentration being mutually adapted to confine reverse bias breakdown to said central portion of said depression; and

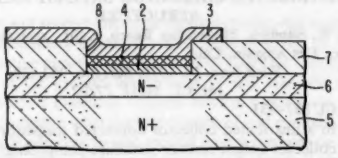
(f) a metal filling said depression and forming a Schottky barrier contact with said epitaxial layer.

4,201,999

LOW BARRIER SCHOTTKY DIODES

James K. Howard, Fishkill; Frank E. Turene, Pleasant Valley, and James F. White, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 22, 1978, Ser. No. 944,815
Int. Cl.² H01L *29/48, 29/56, 23/48*
U.S. Cl. 357—15 **4 Claims**



1. A schottky barrier contact on a silicon surface comprised of sequential layers of

a transition metal adjacent said surface;

an intermetallic compound of a said metal and aluminum; and

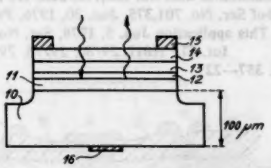
aluminum.

4,202,000

DIODE CAPABLE OF ALTERNATELY FUNCTIONING AS AN EMITTER AND DETECTOR OF LIGHT OF THE SAME WAVELENGTH

Jean-Claude Carballes, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 22, 1978, Ser. No. 918,263
Claims priority, application France, Jun. 27, 1977, 77 19616
Int. Cl.² H01L *31/12*
U.S. Cl. 357—19 **6 Claims**



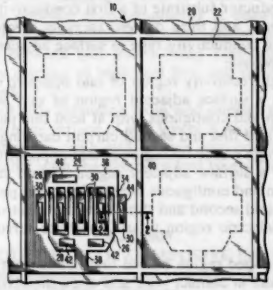
1. A diode capable of functioning alternately as an emitter and detector of light for a predetermined wavelength, comprising: an active semiconductor material layer capable of absorbing or generating photons of said predetermined wavelength, depending upon the direction in which it is biassed, first and second localizing semiconductor material layers having opposite conductivity types and respectively forming two heterojunctions with said active semiconductor material layer, said two localizing layers: electrical contact means for establishing electrical connection to each of said localizing layers so that said diode can be biassed in either the forward or reverse direction and; wherein said active layer having a thickness and a doping such that it is the site of an avalanche phenomenon when said diode is biassed in the reverse direction, for a predetermined voltage having a magnitude less than 30 volts.

4,202,001

SEMICONDUCTOR DEVICE HAVING GRID FOR PLATING CONTACTS

Walter F. Reichert, East Brunswick, and Ho-Chung Huang, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 5, 1978, Ser. No. 903,121
Int. Cl.² H01L *29/80, 27/10, 29/66*
U.S. Cl. 357—22 **13 Claims**



1. A semiconductor device comprising:

a body including a semiconductor material having a surface,

a continuous metal grid on said surface and dividing said surface into a plurality of areas, with each area being surrounded by a portion of said grid

a separate semiconductor element in each of said areas, each

of said semiconductor elements including a plurality of contacts, and

means on said surface electrically connecting at least one of said contacts of each of said semiconductor elements to said grid.

4,202,002

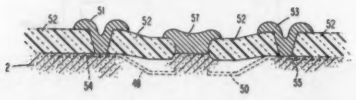
ION-IMPLANTED LAYERS WITH ABRUPT EDGES

F. H. De La Moneda, Reston, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 760,788, Jan. 19, 1977, which is a division of Ser. No. 701,375, Jun. 30, 1976, Pat. No. 4,029,522. This application Jun. 5, 1978, Ser. No. 912,597

Int. Cl.[2] H01L *29/80, 29/78, 29/48*

U.S. Cl. 357—22 **7 Claims**



1. In a semiconductor device, an asymmetrical, buried, conductive layer beneath the surface of a semiconductor substrate, comprising:

an ion-implanted conductive layer formed in the bulk of the substrate having a first end with an angular contour contacting the surface of the substrate and a second end abruptly terminating within the bulk of said substrate.

4,202,003

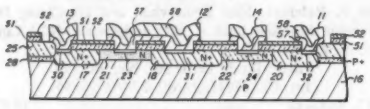
MESFET SEMICONDUCTOR DEVICE AND METHOD OF MAKING

Henry M. Darley, Plano; Theodore W. Houston, Richardson, and Han T. Yuan, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 21, 1978, Ser. No. 898,581

Int. Cl.[2] H01L *29/48*

U.S. Cl. 357—15 **7 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

first, second, and third current carrying electrodes of the opposite conductivity type in surface adjacent regions of said substrate;

a first high resistivity region of said opposite conductivity type in a surface adjacent region of said substrate and between and contiguous with at least one perimeter portion of said first and second current carrying electrodes;

a second high resistivity region of said opposite conductivity type in a surface adjacent region of said substrate and between and contiguous with at least one perimeter portion of said second and third carrying electrodes;

a thick dielectric region in said substrate surrounding said device;

a heavily doped region of said first conductivity type lying below and in contact with said thick dielectric region;

a metal silicide region formed in each of said current carrying electrodes at least one perimeter portion of each metal silicide region lying contiguous with at least one perimeter portion of said thick dielectric region;

a metal silicide region in each of said first and second high resistivity regions, the ends of said metal silicide regions in said high resistivity regions lying contiguous with a perimeter portion of said thick dielectric region, said metal silicide regions creating metal-semiconductor junctions as control elements.

4,202,004

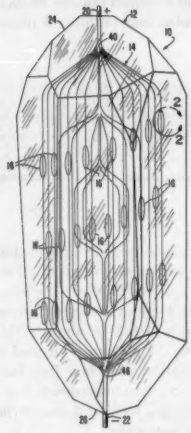
ENERGY CONVERSION UNIT

David C. Andersen, 425 First St., Los Altos, Calif. 94022

Filed Sep. 20, 1978, Ser. No. 944,097

Int. Cl.[2] H01L *27/14*

U.S. Cl. 357—30 **9 Claims**



1. An energy conversion unit comprising: a body of an n-type semiconductor material capable of permitting electrons to be liberated therefrom when electromagnetic radiation is absorbed by the body, there being an electrically conducting loom assembly embedded in the body, said assembly being comprised of a plurality of loom units, each loom unit having an electrode with a p-type semiconductor material thereon and means coupled with the electrode for defining an electrical current flow path extending away therefrom, said semiconductor materials defining a plurality of n-p junctions across which liberated electrons flow to the electrodes and along said current flow paths; and conductor means coupled to the loom assembly and extending outwardly from the crystal for connecting said current flow paths to an electrical circuit externally of the body.

4,202,005

DISTRIBUTED COLLECTOR BALLAST RESISTOR STRUCTURE

Paul W. Sanders, Manhattan Beach, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Nov. 20, 1978, Ser. No. 962,122

Int. Cl.[2] H01L *27/02*

U.S. Cl. 357—51 **7 Claims**

1. In a distributed collector contacted transistor, a distributed collector ballast resistor structure comprising:

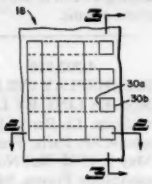
a semiconductive substrate layer;

a plurality of collector regions disposed in the surface of said substrate;

an epitaxial layer bonded to the surface of said substrate and collector regions;

an emitter region disposed in the surface of said epitaxial layer and extending above each collector region;

a base region disposed in the surface of said epitaxial layer and extending above each collector region;



a plurality of collector contacts, each such contact being disposed in the surface of said epitaxial layer and above a respective collector region.

4,202,006

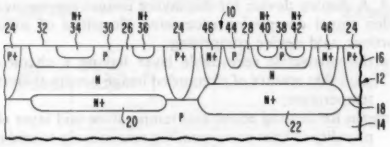
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Heshmat Khajezadeh, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 877,856, Feb. 15, 1978. This application May 21, 1979, Ser. No. 41,086

Int. Cl.[2] H01L *27/04*

U.S. Cl. 357—63 **4 Claims**



1. A semiconductor integrated circuit device comprising:

a body of semiconductive material including a substrate of one type conductivity and an epitaxial layer of opposite type conductivity with an interface therebetween,

a first localized region of opposite type conductivity in said substrate adjacent to said interface and containing opposite type conductivity modifiers consisting essentially of a first chemical element,

a second localized region of opposite type conductivity in said substrate adjacent to said interface and spaced from said region of opposite type conductivity, said second region containing opposite type conductivity modifiers consisting essentially of a second different chemical element,

said first and second chemical elements being characterized by substantially equal diffusion coefficients in said semiconductive material but substantially different vapor pressures at the growth temperature of said epitaxial layer, said second chemical element having a relatively high vapor pressure whereby that portion of said epitaxial layer which is adjacent to said second region contains an autodoped number of atoms of said second chemical element which is greater than the autodoped number of atoms of said first chemical element in that portion of said epitaxial layer which is adjacent to said first localized portion,

said semiconductor material being silicon, said one type being P type, said opposite type being N type, said first chemical element being antimony, and said second chemical element being arsenic.

4,202,007

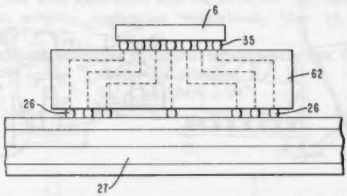
MULTI-LAYER DIELECTRIC PLANAR STRUCTURE HAVING AN INTERNAL CONDUCTOR PATTERN CHARACTERIZED WITH OPPOSITE TERMINATIONS DISPOSED AT A COMMON EDGE SURFACE OF THE LAYERS

William E. Dougherty, Wappingers Falls, and Stuart E. Greer, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,213

Int. Cl.[2] H01L *39/02, 23/48, 29/44*

U.S. Cl. 357—80 **4 Claims**



1. A planar support for attachment to at least one semiconductor device having a plurality of terminals fixed thereon and arranged in a first grid pattern upon one side of the device, comprising

(A) a unitized plurality of superposed dielectric planar layers,

(B) a conductor pattern comprised of a plurality of conductor leads between at least one original adjacent pair of said layers and extending in a return path to and between a common edge surface of said layers,

(a) with said conductor leads substantially coextensive and parallel with the planes of said layers,

(b) with said edge surfaces disposed at the ends of the original interfaces of said layers,

(c) with the common adjacent terminations of said leads disposed at a first portion of said edge surface in a configuration corresponding to a first grid pattern of predetermined spacing, and

(d) with the opposite common terminations of said leads disposed at a second portion of said edge surface in a second grid pattern having spacings substantially larger than said first spacing,

(C) a distribution pattern of conductors on said edge surface and comprised of a plurality of leads having one end connected to respective ones of opposite terminations with the opposite ends terminating at dispersed contact points on a third portion of said edge surface with the spacing between said points being substantially greater than the spacing of both said first and second grid patterns, and

(D) contact pins extending from said contact points to the opposite edge surface of said layers in projecting relationship therefrom, with said contact pins coextending with and parallel with the planes of said layers and conductor pattern.

4,202,008

PRODUCTION OF COMPOSITE IMAGES

Reginald King, Hampton, England, assignor to Evershed Power-Optics Limited, Chertsey, England

Filed Mar. 29, 1977, Ser. No. 782,579

Claims priority, application United Kingdom, Mar. 29, 1976, 12589/76

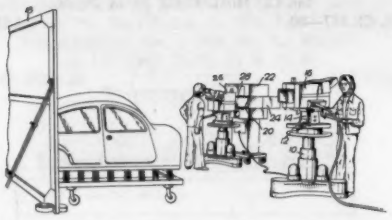
Int. Cl.[2] H04N *5/22, 5/24*

U.S. Cl. 358—22 **7 Claims**

1. A method for producing composite images in which a foreground camera views a subject in front of a colored screen, a background camera views an image of a background scene,

and a mixing circuit derives from the foreground and background cameras a composite signal which represents the foreground subject but in which the background signal is substituted for the foreground camera signal whenever the latter represents said colored screen, the method further comprising the steps of:

generating signals responsive to panning and tilting movements of the foreground camera, said signals representing the extend of such movements; and



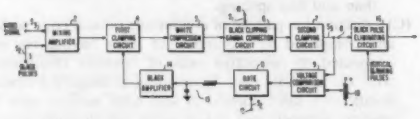
mounting an opaque picture constituting the background image on a support so as to be viewed directly by the back-ground camera and moving said picture in first and second mutually perpendicular directions in a plane perpendicular to the optical axis of the background camera in response to said signals generated in response to panning and tilting movements so that the image provided by the background camera appears to move in a direction opposite to the direction of panning or tilting movement of the foreground camera, said opaque picture being larger than the shot viewed by said background camera.

4,202,009

PROCESSING AMPLIFIER FOR THREE-TUBE COLOR TELEVISION CAMERA

Yasuichi Ushiyama, and Setsuo Yamamoto, both of Toyko, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1978, Ser. No. 930,269
Claims priority, application Japan, Aug. 3, 1977, 52/93506
Int. Cl.[2] H04N *9/53*
U.S. Cl. 358—32 **5 Claims**



1. A processing amplifier device for stabilizing black level in a red, green or blue channel of a three-tube color television camera, said device comprising:

a preamplifier for amplifying a video signal from said channel;

a mixing amplifier circuit operable to mix the output of said preamplifier with black pulses of a predetermined level during a blanking period;

a first clamping circuit for clamping the output of said mixing amplifier circuit to a first predetermined voltage level during that part of the blanking period which is free of the black pulses added thereto;

correction means for effecting black clipping and gamma correction to the output signal of said first clamping circuit;

a second clamping circuit for clamping the output of said correction means to a second predetermined voltage level during said part of the blanking period;

a comparison circuit for comparing the level of said black pulses in the output of said second clamping circuit with a reference voltage; and

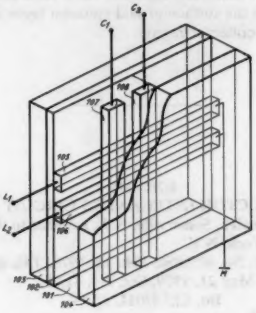
a feedback loop arranged to control the clamp voltage level of said first clamping circuit in accordance with the output of said comparison circuit.

4,202,010

THERMOELECTRIC DISPLAY CELL FOR RECORDING IMAGES LINE BY LINE

Michel Hareng, and Serge Le Berre, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 2, 1978, Ser. No. 902,112
Claims priority, application France, May 5, 1977, 77 13738
Int. Cl.[2] H04N *9/30, 5/66*; G02F *1/13*; G09F *9/30*
U.S. Cl. 358—56 **16 Claims**



1. A display device for displaying images represented by a video signal comprising successive pluralities of successive portions, said device comprising:

a thermoelectric recordable layer having a characteristic such that erasure of a recorded image occurs at an erasure temperature;

means for heating above said temperature said layer along a plurality of lines corresponding respectively to said pluralities of successive portions of the video signal; said lines being heated temporarily one after the other and each line being heated simultaneously along its length;

means for applying a plurality of electrical fields respectively to a plurality of portions of said layer overlying parts of each line after the heating of one of said lines and until said one line reaches a temperature below said erasure temperature, said plurality of electrical fields representing one of said successive pluralities of successive portions of the video signal, thereby causing said plurality of successive portions of the video signal to be recorded in said layer at said parts of said one line.

4,202,011

TELEVISION SIGNAL CODER

Toshio Koga, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1977, Ser. No. 865,147
Claims priority, application Japan, Dec. 28, 1976, 51-158290
Int. Cl.[2] H04N *7/12*
U.S. Cl. 358—136 **6 Claims**

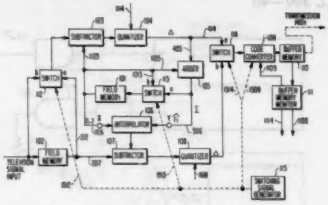
1. A television signal coder for coding a television signal by making use of correlation, said television signal consisting of a series of fields each representing a number of two-dimensionally arranged picture elements of an optical image to be transmitted, said coder comprising:

means for selecting n fields of said television signal among every m fields of said television signal, said m and n being positive integers, said n being less than said m;

means for deriving an array of interpolated values corresponding to the interpolation between said picture ele-

ments of preceding and succeeding fields adjacent to said selected n fields

first coding means for coding the difference between the television signal level in said selected n fields and said interpolated values;



second coding means for coding the television signal in the (m−n) fields consisting of said m fields excluding said selected n fields; and

means for code-converting the outputs of said first and second coding means.

4,202,012

SAMPLING CLOCK REPRODUCING DEVICE

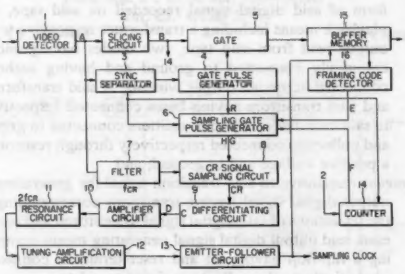
Masayoshi Hirashima, Ibaraki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Ibaraki, Japan

Filed Mar. 1, 1978, Ser. No. 882,087

Claims priority, application Japan, Mar. 15, 1977, 52-28840; May 20, 1977, 52-59262

Int. Cl.² H04N *7/08*

U.S. Cl. 358—147 **5 Claims**



1. Apparatus for deriving sampling clock signals from a television signal including horizontal sync signals defining corresponding time intervals, vertical sync signals, a predetermined number of pilot signals comprising a group following a particular one of said horizontal sync signals during each field of said television signal, and a group of binary coded signals following each group of said pilot signals and extending over at least two of said time intervals, said binary coded signals having a predetermined phase relationship with said pilot signals, said apparatus comprising:

a sampling circuit for sampling said pilot signal;

means for repetitively generating a pilot signal sampling gate pulse whose leading edge is defined by a waveform which is derived by delaying a horizontal sync signal and whose trailing edge is defined by a signal produced when a predetermined number of pilot signals has been counted, said trailing edge of said pilot signal sampling gate pulse occurring prior to the termination of the last of said predetermined number of pilot signals in the corresponding group thereof;

sampling means for applying said pilot signal sampling gate pulse to said sampling circuit, thereby sampling only said pilot signal; and

means responsive to the signal derived by said sampling means for generating sampling clock signals for sampling said binary coded signals.

4,202,013

LINE TIME BASE IN TELEVISION RECEIVER

Johannes S. A. van Hattum, and Jan A. C. Korver, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

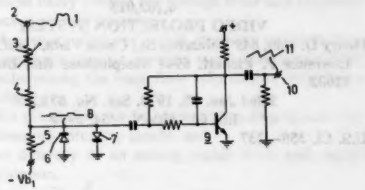
Continuation of Ser. No. 229,081, Feb. 24, 1972, Pat. No. 3,764,744. This application Sep. 24, 1973, Ser. No. 400,403

Claims priority, application Netherlands, Mar. 16, 1971, 7103466

The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.

Int. Cl.² H04N *5/04*

U.S. Cl. 358—158 **5 Claims**



1. A circuit for producing from a television line flyback signal a stable reference signal regardless of the load upon the line signal source, said circuit comprising input means for receiving a line flyback signal; means direct current coupled to said input means for amplitude limiting said flyback signal to a first voltage if said flyback signal is above said first voltage; means direct current coupled to said input means for amplitude limiting said flyback signal to a second voltage if said flyback signal is below said second voltage and an output means coupled to limiting means for supplying a reference signal in accordance with said limited flyback signals.

4,202,014

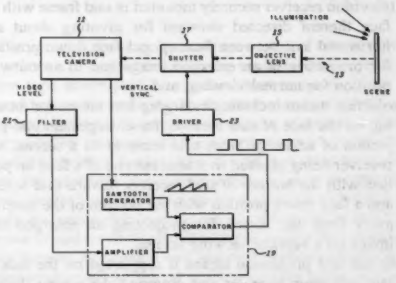
PULSE MODULATED AUTOMATIC LIGHT CONTROL

Lawrence H. Gilligan, and James E. Hermansdorfer, both of Charlottesville, Va., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 13, 1978, Ser. No. 924,261

Int. Cl.² H04N *5/26*

U.S. Cl. 358—228 **3 Claims**



1. An automatic light control for a television camera comprising voltage-variable birefringence crystal shutter means for

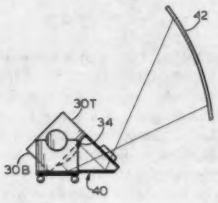
controlling the average intensity of light reaching said camera, and means for adjusting the transmissivity of said shutter means in response to an electrical signal, said transmissivity adjusting means including a pulse width modulator connected to initiate a pulse in response to a vertical synchronizing signal produced in said camera and to maintain the pulse for a length of time that varies inversely with the magnitude of the video level signal produced in said camera, said pulse width modulator being coupled to the shutter means so as to switch the shutter means to a specified high transmissivity state during the occurrence of an output pulse and to maintain the shutter in a specified low transmissivity state in the absence of an output pulse.

4,202,015

VIDEO PROJECTION SYSTEM

Henry D. Udo, 549 Poinsettia St., Chula Vista, Calif. 92011, and Lawrence F. Pickett, 5941 Steeplechase Rd., Bonita, Calif. 92002

Filed Jan. 25, 1978, Ser. No. 872,220
Int. Cl.[2] H04N 5/64, 5/74
U.S. Cl. 358—237 **6 Claims**



1. A video projection system for projecting an enlarged video image from a television receiver onto a screen, comprising in combination:

a mounting cradle comprising a generally rectangular box-like frame for extending snugly around the top, bottom and two sides for receiving and securing the housing of a television receiver with the face of the receiver defined by the screen and face thereof exposed and directed outward, and including support means including a base and a pair of vertically extending support members including trunion means for supporting said frame for pivotal movement about a horizontal axis,

a television receiver securely mounted in said frame with the face thereof directed outward for pivoting about said horizontal axis between face up and face down positions for projection of an enlarged image and to an outward position for normal viewing, and

projection means including enlarging lens means for mounting on the face of said receiver for enlargement and projection of an image from said receiver to a screen, said receiver being pivoted to a selected one of a face up position with the bottom of said receiver toward said screen, and a face down position with the bottom of the receiver away from the screen for projecting an enlarged true image on a vertical viewing screen,

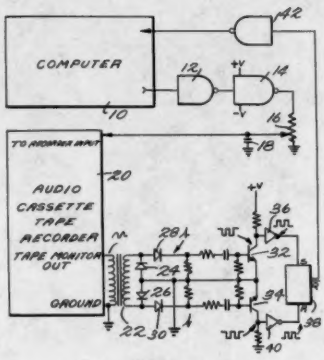
wherein said projection means is supported on the face of said television receiver and covering the screen thereof during face up projection and is supported on said base and covering the screen of said television receiver during face down projection.

4,202,016

DIGITAL MAGNETIC DATA STORAGE AND RETRIEVAL USING AUDIO ANALOG RECORDING TECHNIQUES

Harry R. Sampey, Box 484, Vanderbilt, Pa. 15486

Filed Jan. 30, 1978, Ser. No. 873,543
Int. Cl.[2] G11B 5/09
U.S. Cl. 360—40 **9 Claims**



1. An apparatus for storing and recovering a digital signal indicative of digital data on magnetic recording tape comprising:

means for recording said digital signal in respectively corresponding analog form onto said tape, without saturating said tape;

playback means for reading said tape and generating a transition detection signal indicative of transitions in said analog form of said digital signal recorded on said tape, said playback means including a transformer responsive to the output read from said tape, two diodes having anodes commonly connected to ground and having cathodes connected across an output winding of said transformer, and two transistors having bases connected respectively to said two diode cathodes, emitters connected to ground and collectors connected respectively through resistors to a positive voltage and to ground; and

means responsive to said transition signal for generating an output digital signal having transitions corresponding to the transitions of said digital signal to be stored and recovered, said output digital signal generating means comprising a flip-flop having set and reset terminals connected respectively to the collectors of said transistors.

4,202,017

MAGNETIC RECORDING SIGNAL EQUALIZATION APPARATUS

Arthur P. Geffon, Sunnyvale, and George V. Jacoby, Los Altos, both of Calif., assignors to Sperry Rand Corporation, New York, N.Y.

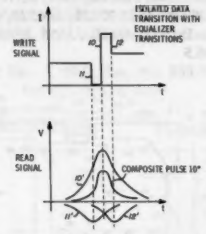
Filed May 8, 1978, Ser. No. 903,415
Int. Cl.[2] G11B 5/09, 5/47
U.S. Cl. 360—45 **11 Claims**

1. Magnetic data recording apparatus for supplying a recording signal including ac bias and write data occurring at a repetition frequency to a magnetic recording transducer to record data in the form of magnetic patterns in a magnetizable medium, comprising:

means for supplying an ac bias signal to the recording transducer, said ac signal occurring at a frequency greater than said repetition frequency,

means for generating data transitions representative of the data to be recorded, and means operatively associated with the data transition generating means for producing

an equalizer transition preceding each data transition an an equalizer transition following each data transition, the equalizer transitions having substantially equal magnitudes and being oppositely sensed to the associated data transition and having an amplitude greater than about 0.375 times the amplitude of the data transition, and said



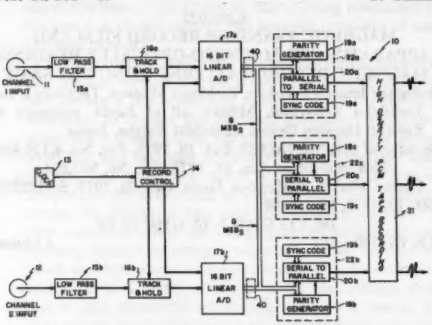
equalizer transitions being uniformly spaced from the data transition so as to combine therewith on readout from the magnetizable medium to provide a composite data read pulse of reduced width at the base and half amplitude levels and means for combinationally coupling said ac bias signal and said transitions to said magnetic recording transducer.

4,202,018

APPARATUS AND METHOD FOR PROVIDING ERROR RECOGNITION AND CORRECTION OF RECORDED DIGITAL INFORMATION

Thomas G. Stockham, Jr., Salt Lake City, Utah, assignor to Soundstream, Inc., Salt Lake City, Utah

Filed Sep. 27, 1978, Ser. No. 946,067
Int. Cl.[2] G11B 5/09
U.S. Cl. 360—47 **15 Claims**



1. A recorder apparatus for recording of an analog signal in digital form for storage and playback comprising,

main flows each arranged to receive a multiple channel input;

means for providing a digital representation of an analog signal;

clocked record control circuitry means for controlling said means for providing a digital representation of an analog signal;

a backup flow arranged to receive most significant portions of each data word each said main flow;

means for adding synchronization and parity coding to each data word on each said main and backup flow;

means for recording said main and backup flow data on a permanent media;

means for reading said data from said permanent media;

bit synchronizer circuitry means for determining bit intervals in each data word on each data word on each said flow passing that data and generating a clock signal therewith;

synchronizer code finding means receiving clock pulsing from said bit synchronizer circuitry means for locating the synchronizer coding in each data word on each flow and passing appropriate signals when such code is present and when it is absent in each data word;

parity checking circuitry means for locating a parity bit in each data word on each flow and passing appropriate signals when parity coding is present and when it is absent;

comparator selector circuitry means for comparing the most significant data on said main flow against the data on said backup flow reflective thereof to determine if a match exists and for passing appropriate signals when a match exists and when said data does not match;

error detector and corrector circuitry means connecting to said synchronizer code finding means, said parity checking circuitry means and said comparator selector circuitry means for determining whether there is an error present in main and backup flow data and selecting which information is most likely correct for passage from said comparator selector circuitry means;

data word memory circuitry means receiving said data from said comparator selector circuitry means and clock signals for synchronizing the main flow information output to a playback head;

a means for producing clock signals connecting to said data word memory circuitry means; and

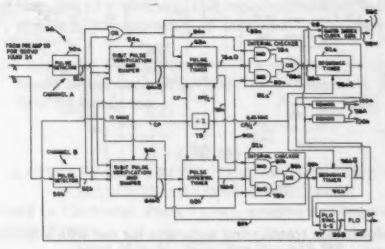
means for delivery of an analog signal from said digital representation.

4,202,019

TIMING CIRCUIT AND METHOD FOR A TRACK FOLLOWING SERVO IN A DATA STORAGE SYSTEM

Paul M. Popoff; Siu K. Lee, both of Sunnyvale, Calif., and James J. Touchton, Boulder, Colo., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 24, 1978, Ser. No. 880,906
Int. Cl.[2] G11B 5/09
U.S. Cl. 360—51 **10 Claims**



1. In a track following data storage system of the type which has at least a first servo track having a magnetization pattern of a first type interrupted by relative short magnetizations of a second type, a second servo track juxtaposed to said first servo track and having a magnetization pattern of said second type interrupted by relatively short magnetizations of said first type, the relatively short designations in said first track being offset from the relatively short designations in said second track, signal producing means operatively associated with said servo tracks for producing in response to relative movement with respect to said servo tracks a first signal having successive dibit pairs formed by positive and negative portions of amplitudes representative of the lateral position of said signal producing means relative to the tracks and a second signal that is the inverse of the first signal, and a phase-locked-oscillator having a sync input and producing a clock pulse in phase with signals applied to the sync input, an improved timing circuit for syn-

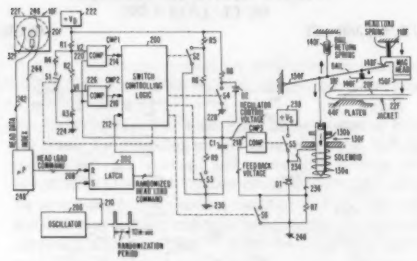
chronizing said phase-locked-oscillator to the rate at which the relatively short magnetizations move relative to said signal producing means comprising a first detector coupled to said signal producing means for producing a first rectified signal representative of only the positive portions of said first signal, a second detector coupled to said signal producing means for producing a second rectified signal, a first timer coupled to said first detector for generating a first timing signal having a duration approximating that of a single dibit, a second timer coupled to said second detector for generating a second timing signal having a duration approximating that of a single dibit, first gating means responsive to said first timer and said second detector for producing upon coincidence of said first timing signal and said second rectified signal a first verified pulse representative of a dibit of a first polarity, second gating means responsive to said second timer and said first detector for producing upon coincidence of said second timing signal and said first rectified signal a second verified pulse representative of a dibit of a second polarity opposite from said first polarity, and means coupling said first and second verified pulses to the sync input of said phase-locked-oscillator.

4,202,020

MAGNETIC HEAD LOAD CONTROL SYSTEM

Jeffrey L. Lovgren, and William P. Quinlan, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1978, Ser. No. 938,727
Int. Cl.² G11B *21/12*
U.S. Cl. 360—75 **16 Claims**



1. Information transferring apparatus for use with a moving information carrying medium comprising:

a transducer movable from an inoperative position separated from the medium and toward the medium and to an operative data transferring position on a single selected track on the medium,

motor means connected with said transducer for so moving the transducer from its said inoperative position to its operative position when the motor means is operable,

control mechanism connected with said motor means for rendering the motor means so operable to cause it to move said transducer from its said inoperative position to its said operative position on the reception of a transducer load command signal applied to the control mechanism, and

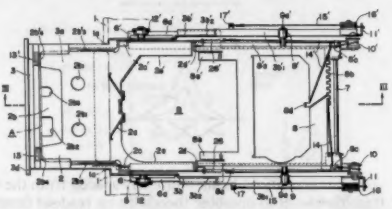
means for randomly delaying this energization of said motor means to move said transducer from its said inoperative position to its operative position at a random time after said transducer load command signal is applied to said control mechanism.

4,202,021

FRONT-LOADED CASSETTE TAPE DECK

Tetsuo Nagase; Hideo Watanabe, and Akira Inomata, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 921,153
Claims priority, application Japan, Jun. 30, 1977, 52-77234; Jun. 30, 1977, 52-77235; Jun. 30, 1977, 52-77236; Jun. 30, 1977, 52-77237; Jun. 30, 1977, 52-77238; Jun. 30, 1977, 52-77239
Int. Cl.² G11B *15/66, 23/04*
U.S. Cl. 360—96.5 **8 Claims**



1. A cassette tape transport mechanism comprising:

(a) conveying means adapted to receive a cassette for conveying said cassette reciprocally in opposite directions between a first position and a second position;

(b) auxiliary conveying means mechanically coupled to said conveying for movement relative thereto and adapted for reciprocal movement in the same two directions, respectively, as said conveying means for moving said conveying means a greater distance than said auxiliary conveying means; and,

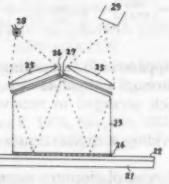
(c) maintaining means for maintaining said conveying means in said second position when said conveying means is moved to said second position.

4,202,022

MAGNETIC TRANSFER RECORD FILM AND APPARATUS FOR MAGNETO-OPTICALLY READING MAGNETIC RECORD PATTERNS USING THE SAME

Nobutake Imamura, Tokyo; Yoshinori Mimura, Tachikawa, and Toshihiko Kobayashi, Mitaka, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Division of Ser. No. 733,929, Oct. 19, 1976, Pat. No. 4,126,494. This application Aug. 14, 1978, Ser. No. 933,651
Claims priority, application Japan, Oct. 20, 1975, 50-125357; Oct. 20, 1975, 50-125358
Int. Cl.² G11B *5/32;* G11C *13/04*
U.S. Cl. 360—114 **4 Claims**



1. An apparatus for magneto-optically reading magnetic record patterns, comprising: a transparent substrate; a magnetic transfer record film having a thickness exceeding 500 A disposed on said substrate and having an easy axis of magnetization in a direction perpendicular to the film surface, said film comprising an amorphous alloy consisting essentially of a rare earth metal selected from the group consisting of Gd, Tb, Dy and Ho and having a concentration X wherein $0.15<X<0.35$, and the balance of a metal selected from the group consisting of Fe, Co and Ni, and said film having an easy axis

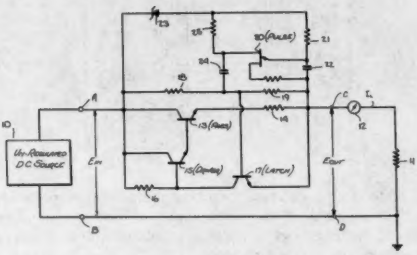
of magnetization in a direction perpendicular to the film surface, a magnetic coercive force of less than 500 Oe and a saturation magnetic moment which is minimum with respect to a change in the concentration X within a temperature range of 100° C. from room temperature; and means for optically reading magnetic patterns on said film.

4,202,023

OVERLOAD PROTECTOR

Kay G. Sears, Keyport, N.J., assignor to Entron, Inc., Morganville, N.J.

Filed Dec. 7, 1977, Ser. No. 858,371
Int. Cl.² H02H 3/08
U.S. Cl. 361—18 **1 Claim**



1. An overload protector interposed between a d-c voltage source and a load supplied thereby, said protector comprising:

A. a current-control network constituted by a pass transistor connected in series with a current-limiting resistor between the source and the load;

B. a latching network connected across the control network formed by a resistor in series with a latching transistor;

C. a driver transistor connected to the base of the pass transistor, the base of the driver transistor being connected to the junction of said resistor and latching transistor of said latching network;

D. a voltage divider connected across the control network, said divider formed by two resistors connected in series and having a tap connected to the base of the latching transistor to render the latching transistor conductive when the voltage across the divider is high, said driver transistor and said pass transistor being conductive uner normal load conditions below a predetermined limit to supply current to the load, in which condition the voltage across the divider is low and said latching transistor is then non-conductive, the voltage drop across said current-limiting resistor reaching a value when said current exceeds said limit under overload conditions to bias said pass transistor to cut-off, at which point the voltage drop across said divider becomes high to apply a bias to the base of said latching transistor to render it conductive and thereby bias the driver transistor to its "off" state, which driver transistor then biases the pass transistor to its "off" state; and

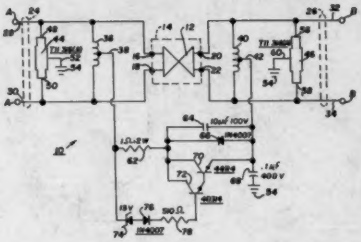
E. an automatic resetting stage coupled to said control network to periodically sample the state of said load and to restore said pass transistor to its "on state" and to restore the normal supply of current to said load when the current drawn during a sampling interval falls below said limit, said resetting stage including a slow speed pulser which is connected to said control network through a diode which is rendered conductive to activate said pulses when said pass transistor is rendered non-conductive, which applies a pulse to the base of the latching transistor when an overload condition is sampled to render said latching transistor non-conductive and thereby allow current to again flow in the current-limiting resistor, said pulses being formed by a pulse transistor connected to an R-C network which is charged through said conductive diode and discharged by said pulse transistor when the charge attains a critical value to produce a pulse, said pulse being applied to the base of the latching transistor through a capacitor.

4,202,024

REPEATER BYPASS PROTECTION APPARATUS

Frank L. Simokat, Babylon, N.Y., assignor to TII Industries, Inc., Lindenhurst, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,646
Int. Cl.² H04B 3/56
U.S. Cl. 361—91 **11 Claims**



1. A repeater bypass protection apparatus for repeaters having a pair of input and output terminals connected respectively to input and output transmission lines, comprising, in combination:

(a) first and second coil means having a center tap, said first coil means being connected across said input terminals, said second coil means being connected across said output terminals;

(b) current path means connected between said first coil means center tap and said second coil means center tap for providing a D.C. current path therebetween, said current path having a relatively high impedance during normal operating conditions and essentially instantaneously changing to a relatively low impedance during over voltage transients appearing on said input transmission lines; and

(c) capacitor means connected between said second coil means center tap and ground for blocking D.C. current flow therebetween.

4,202,025

A CIRCUIT FOR PROTECTING AN ELECTRONIC EXCHANGE AGAINST OVERLOADS

Gérard Le Cardonnel, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 11, 1976, Ser. No. 685,389
Claims priority, application France, May 16, 1975, 75 15435
Int. Cl.² H02H 5/04
U.S. Cl. 361—103 **1 Claim**

1. A telephone line circuit protected against overloads, said circuit comprising:

a line transformer for isolating a subscriber line from an exchange;

a call relay for switching said subscriber line from said line transformer to a call transformer under the control of an external call signal;

an isolating relay for disconnecting said subscriber line from said line circuit under the control of an external switching signal;

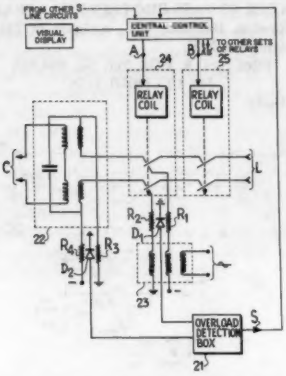
normal resistors connected to said line transformer for feeding said subscriber line with direct current during normal operation;

call resistors connected between said call transformer and

said call relay for feeding said subscriber line with direct current during calling;

at least one normal diode in close contact with at least one of said normal resistors;

at least one call diode in close contact with at least one of said call resistors; and



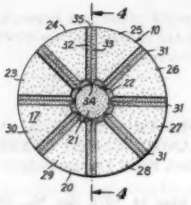
a circuit for forward biasing said normal and call diodes, monitoring the bias of said normal and call diodes, and emitting on an output connection a logical signal when said bias rises to a predetermined value.

4,202,026

ELECTRODE FOR TELEPHONE PROTECTOR MODULES

Paul V. DeLuca, Port Washington, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,880
Int. Cl.[2] H02H 3/22
U.S. Cl. 361—119 **4 Claims**



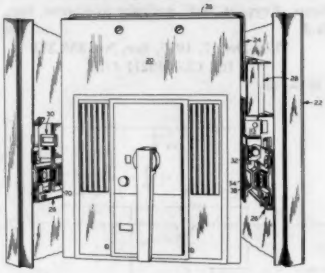
1. In a telephone line protective device, including a pair of spaced electrodes and an insulating sleeve mounting one of said electrodes and forming an inner gap between said pair of electrodes, the improvement comprising: one of said opposed surfaces having a plurality of radially arranged grooves extending into the surface thereof, to define a corresponding plurality of pie-shaped sectors therebetween; said electrode having a principle longitudinal axis, there being a centrally disposed blind curvilinear recess in said one of said opposed surfaces, and communicating at the periphery thereof with said radially arranged grooves; whereby during arcing between said opposed surfaces, venting of expanding gases may be transmitted over said recess to flow along each of said grooves, irrespective of which of said pie-shaped surfaces receives the arc.

4,202,027

CIRCUIT BREAKER DRAWOUT WITH ENGAGED POSITION LATCH

Eric A. Ericson, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,432
Int. Cl.[2] H02B 1/04
U.S. Cl. 361—338 **7 Claims**



1. A drawout apparatus for racking a circuit breaker into and out of an engaged position with respect to load current carrying primary disconnect contacts of a switchboard, said apparatus comprising, in combination:

A. a carriage mounting the circuit breaker;

B. opposed rail assemblies mounted by the switchboard to each side of a switchboard cubicle and supporting said carriage for racking movement into and out of the circuit breaker engaged position;

C. a manually operated racking mechanism mechanically assisting racking movement of the circuit breaker into and out of its engaged position, said racking mechanism including coacting camming means separately mounted by said carriage and the switchboard; and

D. a latching mechanism including

(1) a first latch member mounted by one of said carriage and switchboard for movement between latching and nonlatching positions,

(2) a second latch member fixedly mounted to the other of said carriage and switchboard, and

(3) means carried by said camming means for controllably positioning said first latch member to its latching position in latching engagement with said second latch member incident with operation of said racking mechanism in racking the circuit breaker fully into its engaged position and controllably positioning said first latch member to its non-latching position removed from latching engagement with said second latch member incident with initial operation of said racking mechanism preparatory to racking the circuit breaker out of its engaged position.

4,202,028

GROUND AND TEST APPARATUS WITH INDICIA MEANS

Leslie L. Baird, West Burlington, Iowa, assignor to General Electric Company, Philadelphia, Pa.

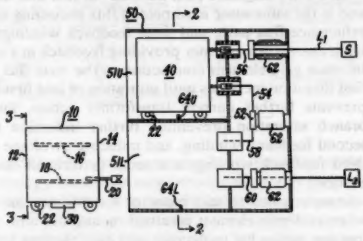
Filed Nov. 27, 1978, Ser. No. 963,863
Int. Cl.[2] H02B 1/04
U.S. Cl. 361—343 **11 Claims**

1. A ground and test apparatus in combination with switchgear apparatus wherein the switchgear apparatus includes an upper circuit breaker compartment and a lower circuit breaker compartment, each of the compartments including at least one pair of vertically spaced-apart electrical switchgear contacts, one of the pair of switchgear contacts comprising a bus-side contact and the other of the pair of contacts comprising a line

or load side contact, the pairs of switchgear contacts in the upper and lower compartments being substantially identically disposed along a common vertical axis except the relative vertical position of the bus-side contact and the line or load side contact in the upper and lower compartments is reversed, wherein the combination comprises:

(a) a housing having spaced-apart front and rear sides and being of a configuration suitable for insertion into said upper or lower compartments of said switchgear apparatus with said rear side facing said pair of electrical contacts of said upper or lower compartments of said switchgear apparatus;

(b) at least one pair of vertically spaced-apart housing electrical conductors extending at least partially between said front and rear sides of said housing, said pair of housing conductors being spaced-apart in substantially the same manner as said spaced-apart electrical switchgear contacts of said switchgear apparatus, at least one member of said pair of housing conductors at said rear side of said housing being adapted so that when said housing is fully inserted



into one of said compartments, said conductor is electrically connected to a predetermined member of said pair of switchgear contacts of said upper or lower compartment of said switchgear apparatus and said one member of said pair of housing conductors is physically accessible for connection to ground at said front side of said housing;

(c) indicia means located on said front side of said housing for visually indicating the proper relative vertical location of said bus-side and line or load side electrical switchgear contacts in said upper or lower compartments; and

(d) inhibiting means coupled to said indicia means for physically inhibiting the full insertion of said housing into said upper or lower compartments when said indicia means visually indicates an improper relative vertical location of said bus-side and line or load side electrical switchgear contacts in said upper and lower compartments, said inhibiting means permitting the full insertion of said housing into said upper or lower compartments when said indicia means visually indicates the proper relative vertical location of said bus-side and line or load side electrical switchgear contacts.

4,202,029

TRANSPORTABLE TELEPHONE EXCHANGE APPARATUS

Hiroshi Yoshikawa, Fujisawa; Akihiro Kawakami, and Hideaki Sato, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 503,876, Sep. 6, 1974, abandoned, which is a continuation of Ser. No. 364,495, May 29, 1973, abandoned. This application Aug. 19, 1976, Ser. No. 715,721

Int. Cl.[2] H02B 1/04

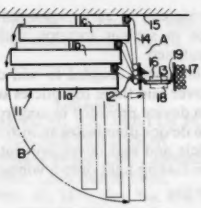
U.S. Cl. 361—394 **7 Claims**

1. A telephone exchange apparatus housed in a mobile container having longitudinally extending side walls comprising:

a plurality of groups of frames, each group of frames comprising plural movable frames with each frame having a front and a rear face, one half of said plurality of groups being disposed along one of the longitudinally extending side walls and the other half of said plurality of groups being disposed along the other one of the longitudinally extending side walls, respectively, the frames in each group being positioned in a normal state such that the rear face of a hindmost frame in each said group is closely confronted in parallel with one of said longitudinally extending side walls with substantially no clearance therebetween, that the front face of a foremost frame in each said group is accessible from a central maintenance path extending longitudinally and transversely in the center of said container, and that the front and rear faces of two mutually adjacent frames in each said group are confronted in parallel with each other with substantially no clearance therebetween;

hinge members connected to each of said frames for enabling the respective frames in each group to rotate about a common vertical axis positioned near to one lateral end of a frame in each said group for displacement from positions in the normal state to positions in a maintenance state and vice versa,

outer ends of the respective frames of each group following a substantially common locus along the displacement path thereof, so that the one half of the plurality of groups of



frames are positioned transversely apart from the other half of the plurality of groups of the frames with only the central maintenance path therebetween in the normal state,

the groups disposed along both side walls of the container being commonly positionable in the maintenance state in said central maintenance path, said central maintenance path having only such a width extending transversely to the longitudinal side walls as substantially equal to a longitudinal length of one frame whereby nonutilizable space within said container is minimized and space utilization factor of the frames is improved, and

a terminal frame respectively provided for each said group of frames in the vicinity of the common vertical axis positioned near to one lateral end of a frame in each said group, each of said terminal frames being fixedly secured to said container and having a terminal strip with front and back sides on which connection terminals are mounted, respectively, said terminal strip for each said group of frames being mounted to the respective terminal from so as to longitudinally extend in parallel with one side wall corresponding to said group with a small maintenance space between said one side wall and said terminal strip.

4,202,030

ILLUMINATION DEVICE FOR MOTOR VEHICLES

Masayuki Kimura, Nagoya, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 3, 1978, Ser. No. 874,874

Claims priority, application Japan, Feb. 7, 1977, 52/013422[U]

Int. Cl.[2] B60Q 1/12

U.S. Cl. 362—61 **7 Claims**

1. An illumination device for motor vehicles which include

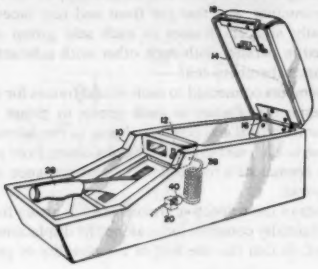
a floor mounted console provided within the passenger compartment, said illumination device comprising:

three receptacles provided in said console;

a case having an opening therein and which is detachably provided in a front recepticle of said three receptacles of said console so that said case can be easily installed and removed from said console;

a lamp provided in said case adjacent to said opening;

a portable source of power for said lamp whereby said illumination device can be easily removed from said console and utilized in various location within said passenger compartment; and



a box cover hingeably coupled to said console, said cover extending over said three recepticles such that when said illumination device provided in said front receptacle, said illumination device illuminates an instrument panel of said motor vehicle and said cover prevents said illumination device from casting light onto a windshield of said motor vehicle.

4,202,031

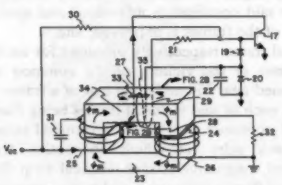
STATIC INVERTER EMPLOYING AN ASSYMETRICALLY ENERGIZED INDUCTOR

Joseph P. Hesler, Liverpool; Samuel M. Korzekwa, Baldwinsville, and Robert J. McFadyen, Syracuse, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Nov. 1, 1978, Ser. No. 956,578

Int. Cl.[2] H02M 7/48

U.S. Cl. 363—97 **18 Claims**



1. A static inverter comprising:

A. input terminals for connection to a source of dc potentials,

B. an inductor having:

1. a core of substantially linear magnetic material having a closed main magnetic path and including a small aperture in a segment of said path which partitions the cross-section of said main magnetic path into two branches and creates a low reluctance closed flux path,

2. a primary power winding encircling the full core cross-section for generating flux around said main magnetic path,

3. a feedback control winding encircling one of said branches for generating a flux around said low reluctance closed path having the same direction as said main flux in a first branch and an opposite direction in the second branch,

4. a second feedback winding encircling said first branch,

5. a third feedback winding encircling said second branch,

C. an electrical gain element having control, common and output electrodes for intermittent energization of said inductor from said dc source,

said primary power winding, said feedback control winding, and said gain element being serially connected between said dc input terminals so that normal conduction by said gain element causes flux along said main magnetic path in a first direction, storing magnetic energy, and non-conduction by said gain element causes said main flux to collapse, releasing magnetic energy and creating a high voltage surge,

said second and third feedback windings being serially connected between said control and common electrodes, said second feedback winding in a sense to increase gain element conduction and said third feedback winding in a sense to decrease gain element conduction when the flux in said main magnetic path increases in said first direction and in the same sense in respect to flux encircling said low reluctance flux path, said three feedback windings forming a current transformer providing feedback in a sense to increase gain element conduction as the main flux in said first direction increases until saturation of said first branch prevents further current transformer action, said first branch saturation preventing further induction in said second feedback winding, and inducing a voltage in said third feedback winding in a sense to turn off said gain element,

D. means coupled to said inductor for deriving an output when said gain element is turned on and off, and

E. passive means for protecting said gain element from the inductive surge and energy released when said gain element is turned off.

4,202,032

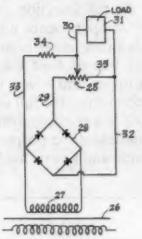
POWER CONTROL CIRCUIT

Gene Morez, Morton Grove, Ill., assignor to Troller Corporation, Chicago, Ill.

Filed Apr. 11, 1977, Ser. No. 786,570

Int. Cl.[2] H02M 7/02, 7/217

U.S. Cl. 363—126 **6 Claims**



1. A power control circuit providing a complete range of signals to a load that varies from "full on" to "full off" comprising:

(a) an AC power source and a transformer providing primary and secondary windings,

(b) a full wave rectifier connected to said secondary winding of said transformer,

(c) a variable signal control connected in circuit between an output of said rectifier and the load having a full on position for supplying a full wave signal to the load, and a negative return from its full off position to another output of said rectifier, and

(d) a circuit connection between said secondary winding and the signal output side of said variable signal control for

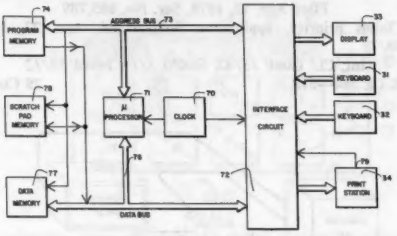
supplying a half wave AC signal to the full wave signal supplied to the load through said variable signal control.

4,202,033

APPARATUS AND METHOD UTILIZING CALCULATOR FOR QUALITY CONTROL OF HEMATOLOGY SAMPLE ANALYSIS

Stanley W. Strobel, San Carlos, Calif., assignor to Royco Instruments, Inc., Menlo Park, Calif.

Filed Dec. 27, 1977, Ser. No. 864,282
Int. Cl.[2] G06F *15/42*; G01N *33/16*
U.S. Cl. 364—416 **6 Claims**



1. A calculator-register apparatus for monitoring calibration of hematology parameter measurement apparatus for performing measurements on test samples comprising: means for receiving parameter measurements on successive test samples and generating a moving average value for at least one parameter, means for storing a baseline value of at least one parameter measured in response to a baseline sample tested when said measurement apparatus is known to be in calibration, means for storing entry of a subsequent value of said at least one parameter measured on said baseline sample after a predetermined duration of operation, means for calculating a difference value between said baseline reading on said baseline sample and said subsequent value for each said at least one parameter, and means for accessing values coupled to said means for receiving parameter measurements and to said means for calculating, said means for accessing values being actuated in response to a command for providing outputs indicative of said moving average value and said difference readings, whereby an indication of necessity for recalibration is provided by said moving average value and said difference value.

4,202,034

ADAPTIVE CONTROLLER FOR OCEAN CHARACTERISTIC MEASUREMENT SYSTEM

Philip N. Bowditch, Cohasset; John M. Dahlen, Duxbury; John F. McKenna, Jr., Gloucester; John T. Shillingford, Jr., Milton; Frank J. Siraco, Malden, and William E. Toth, Bolton, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 16, 1978, Ser. No. 934,334
Int. Cl.[2] B63G *8/14*
U.S. Cl. 364—420 **8 Claims**

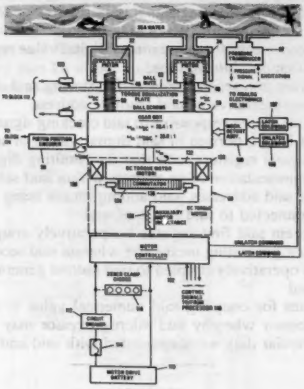
1. A control system for an ocean characteristic measuring system including a platform and control means to controllably move said platform between two vertically displaced underwater points, said control means comprising:

A. one or more sensors for generating sensor signals representative of water characteristics outside said platform,

B. storage means for storing predetermined operating programs,

C. operation control means including: means for selecting one or more of said sensor signals, and means for selecting one or more of said operating programs,

D. BCS generating means responsive to said selected sensor signals and said selected operator program for generating buoyancy control signals representative of desired buoyancy for said platform, and



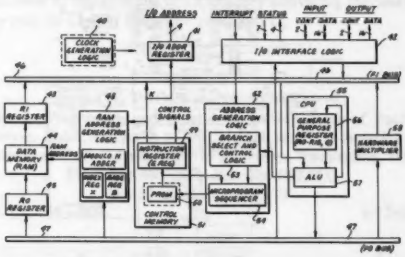
E. means for varying the buoyancy of said platform in response to said buoyancy control signals.

4,202,035

MODULO ADDRESSING APPARATUS FOR USE IN A MICROPROCESSOR

John H. Lane, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Nov. 25, 1977, Ser. No. 854,763
Int. Cl.[2] G06F *9/20*
U.S. Cl. 364—200 **14 Claims**



1. An apparatus for generating addresses, said apparatus coupled to a microprocessor having addressable memory and a clock means for generating clocking signals, said microprocessor adapted for executing instructions for storing and retrieving data words at locations identified by the generated addresses in said addressable memory, said apparatus comprising:

a. Means for selecting a predetermined range of addresses in said addressable memory during storage or retrieval of data words by said microprocessor initiated by at least one transition one of said clock means signals,

b. Means for calculating a numerical value representative of at least one of said addresses within said range associated with any particular data word during the execution of an instruction for the storing or retrieving of data words by said microprocessor concurrent with the selection of said range of addresses by said selecting means, initiated by at least one transition of one of said clock means signals, said selecting, and said calculating means operatively connected to said microprocessor and said clock means, said means for calculating including:

first means for generating a digital value representative of a relative address,

at least one first register for storing said digital value representative of said relative address during at least one transition of said clocking signal, said register operatively connected to said first generating means,

second means for generating a digital value representative of an absolute address,

at least one second register for storing said digital value representative of said absolute address,

adding means responsive to said clocking signal for adding at least a portion of said digital values of said first and second registers such that the resulting digital value is representative of an address within said selected range of said addresses, said adding means being operatively connected to said registers, and

wherein said first register is operatively coupled to said first generating means and wherein said second register is operatively coupled to said second generating means, and

c. means for coupling said numerical value to said microprocessor whereby said microprocessor may access said particular data word associated with said address.

4,202,036

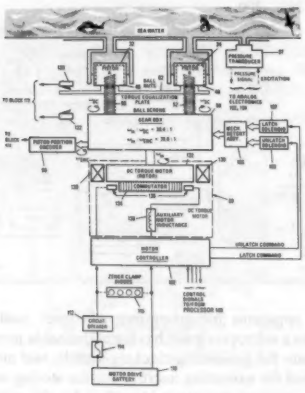
BUOYANCY CONTROL FOR OCEAN CHARACTERISTIC MEASUREMENT SYSTEM

Philip N. Bowditch, Cohasset; John M. Dahlen, Duxbury; John F. McKenna, Jr., Gloucester; John T. Shillingford, Jr., Milton; Frank J. Siraco, Malden, and William E. Toth, Bolton, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 16, 1978, Ser. No. 934,495

Int. Cl.[2] **G01F** *23/00;* **B63G** *8/14*

U.S. Cl. 364—420 **14 Claims**



1. A controlled buoyancy platform adapted to pass between two vertically displaced underwater points, comprising:

one or more displacement pistons and associated cylinder assemblies affixed to said platform, each of said cylinder assemblies including a port means for coupling the interior region of said cylinder on one side of said piston to the region exterior to said platform,

control means for generating a buoyancy control signal representative of a desired buoyancy for said platform,

sealing means for establishing a water-tight seal between each of said pistons and its associated cylinder, whereby the interior regions of said cylinder on opposite sides of said pistons are isolated, and actuating means responsive to said buoyancy control signal for selectively translating each of said pistons to a point in its associated cylinder assembly whereby the buoyancy of said platform as established by the volume displaced by the respective pistons in their associated cylinder assemblies corresponds to said desired buoyancy.

4,202,037

COMPUTER MICROSCOPE APPARATUS AND METHOD FOR SUPERIMPOSING AN ELECTRONICALLY-PRODUCED IMAGE FROM THE COMPUTER MEMORY UPON THE IMAGE IN THE MICROSCOPE'S FIELD OF VIEW

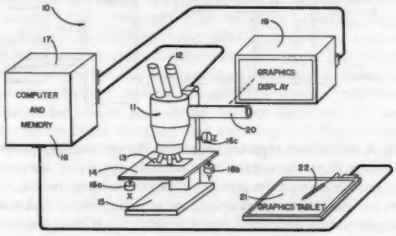
Edmund M. Glaser, 2411 Brambleton Rd., Baltimore, Md. 21209, and Hendrik Van der Loos, 26 chemin de Bellevue, 1005 Lausanne, Switzerland

Filed Apr. 12, 1978, Ser. No. 895,709

Claims priority, application Switzerland, Apr. 22, 1977, 5080/77

Int. Cl.[2] **G06F** *15/42;* **G06M** *3/14;* **H01J** *39/12*

U.S. Cl. 364—518 **29 Claims**



1. A computer microscope, comprising

computer means including memory means for storing data,

graphics display means connected to the computer means for electronically producing an image which includes selected data from the computer memory means, and a set of programmed procedures and instructions available to the operator,

microscope means for viewing a preparation therein and including optical beam splitter means juxtaposed to the graphics display means and optically aligned therewith,

thereby providing a pictorial superposition of the electronically-produced image of the graphics display means upon the image of the preparation in the microscope means, and

manually-manipulatable means interfaced with the computer means and selectively activated by the operator while continuing to view the pictorial superposition in the microscope means,

whereby the operator may control the microscope means via the computer means, and whereby the operator may selectively enter into the computer memory means additional data derived from the preparation, without requiring a diversion of the operator's eyes away from the field of view in the microscope means.

4,202,038

METHOD OF EFFECTING ONE OF SEVERAL DIFFERENT CIRCUIT CONNECTIONS

Stig Anders Petersson, Ormingeringen 48A,, 13200 Saltsjo-Boö, Sweden

Continuation of Ser. No. 823,222, Aug. 10, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,917

Int. Cl.[2] **G06F** *15/02;* **H01H** *7/00*

U.S. Cl. 364—709 **21 Claims**

1. Method of effecting one of several predetermined mutual different circuit connections comprising the steps of

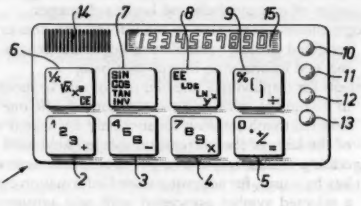
initiating a course of sequentially occurring time windows, or time frames, or time intervals, or time slots in a prede-

termined sequence, starting from an initial first time slot, including

actuating a switch to start said sequence and maintaining actuation of said switch for at least a certain time corresponding to the first time slot in said initiated sequence, a first preset circuit connection being associated with said first time slot and being prepared upon actuation of the switch;

temporally associating respective further circuit connections with respective time slots including

preparing respective circuit connections associated with the respective time slots as sequential time slots occur, circuit connections associated with preceding time slots being disconnected and new circuit connections established



whereby, when actuation of a switch persists for a longer period than the interval of said time slot, the circuit connections will shift at a predetermined point of time corresponding to the transition between said first time slot and the sequentially occurred time slot, and subsequently, to the transition between subsequent time slots;

controlling the length of the time course by selecting a predetermined number of the sequential time slots to effect the circuit connection associated with the respective selected one of the time slots;

and indicating each point of time corresponding to a time slot to provide an operator with a preceptible output of the then existing time slot of the course during each instant of time.

4,202,039

SPECIALIZED MICROPROCESSOR FOR COMPUTING THE SUM OF PRODUCTS OF TWO COMPLEX OPERANDS

Gabriel I. Epenoy, Vence; Roland Kuhne, LaColle sur Loup; Bernard Laurent, St-Laurent-du-Var, and Philippe E. Thirion, St-Paul-de-Vence, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

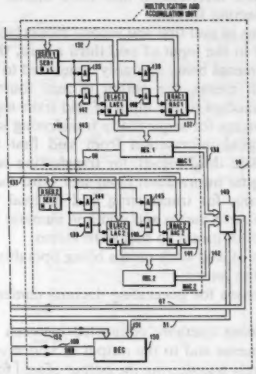
Filed Nov. 29, 1978, Ser. No. 964,316

Claims priority, application France, Dec. 30, 1977, 77 39966

Int. Cl.[2] G06F *7/52*

U.S. Cl. 364—757 **3 Claims**

1. Processor for computing a sum of products $S=\Sigma\pm Pi$, where each product Pi is the product of two n-bit complex operands Ai+j Bi, referred to as the multiplier, and Ci+j Di, referred to as the multiplicand, characterized in that it comprises: an instruction storage for storing instructions serving to control the operation of the processor, decoding means for decoding the instructions read out of the instruction storage and for controlling the operation of the processor, a data storage for storing the complex operands, and a multiplication and accumulation unit that includes: first and second multiplier-accumulator devices each of which is provided with a Multiplier input and a Multiplicant input, first and second multiplier input buffers, first and second multiplicant input buffers, first gating means for transferring to the first multiplier input buffer the real part Ai of the multiplier read out of the data storage, second gating means for transferring to the second multiplier input buffer the imaginary part Bi of the multiplier read out of the data storage, third gating means for simultaneously transferring to said first and second multiplicand input buffers the real part Ci of the multiplicand read out of the data storage, means for applying the real part Ai and the imaginary part Bi of the multiplier to the Multiplier input of said first and second multiplier-accumulator devices, respectively, and the real part Ci of the multiplicand to the Multiplicand input of said first and second devices, which then simultaneously compute the products Ai Ci and Bi Ci, respectively, means for simultaneously transferring to said first and second multiplicand input buffers the imaginary part Di of the multiplicand read out of the data storage, and means for applying the real part Ai and the imaginary part Bi of the multiplier to the Multiplier input of said second and first multiplier-accumulator devices, respectively, and the imaginary part Di of the multiplicand to the Multiplicand input of said first and second devices, the first of which computes the product $-Bi\,Di$ and adds same to the product Ai Ci, thereby providing the real part $Ai\,Ci-Bi\,Di$ of the product Pi, and the second of which computes the product Ai Di and adds same to the product Bi Ci, thereby providing the imaginary part $Bi\,Ci+Ai\,Di$ of the product Pi.



4,202,040

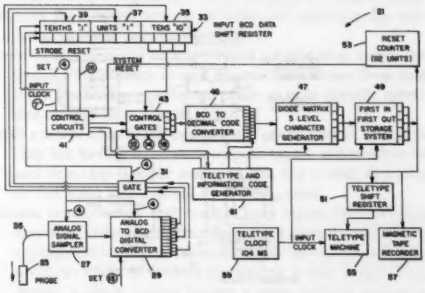
DATA PROCESSING SYSTEM

Eddie L. Whitworth, and Ronald G. Russell, both of Pacific Grove, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 27, 1976, Ser. No. 680,551

Int. Cl.[2] G06F *3/05, 5/02*

U.S. Cl. 364—900 **6 Claims**



1. An information processing system comprising:

(a) first means for receiving and storing first digital information having a first format and representing first decimal members;

(b) second means for generating second digital information

having said first format and representing second decimal numbers;

(c) third means for selectively transferring the output of said first means and the output of said second means;

(d) fourth means for converting said first and second digital information having said first format into decimal information;

(e) fifth means for generating signals representing non numeric information;

(f) sixth means for converting said decimal information and non numeric information into third digital information having a second format;

(g) the outputs of said first and second means being operably connected to the input of said third means, the output of said third means being operably connected to the input of said fourth means, the output of said fourth and fifth means connected to the input of said sixth means;

(h) control means for sequentially transferring said first and second digital information from said first and second means to said third means, for transferring said first and second digital information from said third means to said fourth means, for transferring said decimal information from said fourth means and said non numeric information from said fifth means to said sixth means;

(i) the output of said sixth means being operably connected to processing means;

(j) seventh means for generating decimal numeric information;

(k) eighth means operably connected between said fourth and sixth means and to the output of said seventh means for selectively transferring the output of said fourth means and said seventh means to said sixth means;

(l) a ring counter including a first group of stages, a second group of stages, and a third group of stages;

(m) a plurality of binary digit switches; and

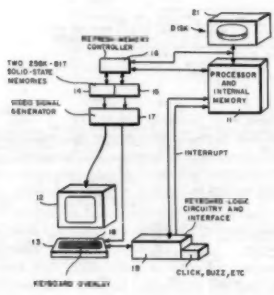
(n) said second means including said first group of stages and said plurality of binary digit switches wherein the outputs of said first group of stages are respectively connected to the inputs of said plurality of binary digit switches and the outputs of said plurality of binary digit switches are connected to the input of said third means.

4,202,041

DYNAMICALLY VARIABLE KEYBOARD TERMINAL

Roy Kaplow, Newton, and Michael K. Molnar, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 11, 1977, Ser. No. 814,723
Int. Cl.[2] G06F *3/14, 13/06*
U.S. Cl. 364—900 **12 Claims**



1. A dynamic keyboard terminal system comprising

a memory means for storing a data base comprising information concerning symbols and keyboard images, wherein said symbol information includes at least a symbol code for identifying said symbol and symbol description information describing said symbol, said description information including at least information defining a symbol configuration or information defining an action associated with said symbol and wherein said keyboard information includes at least a description of the keys involved in said keyboard image, each said key description including at least the location of the key, the appearance of the key, and the symbol code associated with the key;

input means comprising a panel means having a keyboard image and a plurality of touch-sensitive locations which can be activated by a user in a manner such that selected combinations of activated touch-sensitive locations corresponding to symbols available in said data base can provide information concerning the modification of previously available symbols and keyboard images or the creation of new symbols and keyboard images;

logic means, responsive to the information concerning said modified or new symbols and keyboard images, for storing said information in said data base;

means for displaying a selected one of said keyboard images in alignment with said panel means so tht one or more selected touch-sensitive locations are associated with each of the keys of the currently displayed keyboard image;

accessing means, responsive to the selective activation of a key by a user, for accessing stored information concerning a selected symbol associated with said activated key or received symbol code; and

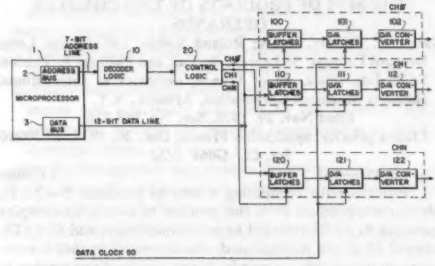
further means, responsive to the accessed information, for displaying the configuration of said symbol and performing the associated action of said symbol.

4,202,042

DIGITAL TO ANALOG INTERFACE FOR SIMULTANEOUS ANALOG OUTPUTS

John P. Connors, Silver Spring, Md.; Bernard J. Nordmann, Bronx, N.Y.; David M. Wainland, Cardiff, N.J., and Henry P. Bell, Laurel, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1977, Ser. No. 813,038
Int. Cl.[2] H03K *13/175*
U.S. Cl. 364—900 **1 Claim**



1. In a data processing system comprising a digital processing unit, having an address bus output for a multi-bit address word and a data bus output for a multi-bit data word, and a plurality of digital-to-analog (D/A) converters, wherein a plurality of said data words are sequentially routed, one to each of said plurality of D/A converters, with a particular data word being routed to the D/A converter indicated by a corresponding, unique address word; a digital interface circuit for coupling said digital processing unit to said plurality of digital-to-analog converters while minimizing processing delays, whereby simultaneous, synchronous, multi-channel analog outputs are obtained from said digital processing unit; said digital interface circuit comprising:

a plurality of D/A latching means for storing a single, multi-

bit data word, each having a data input, a data output coupled to one of said plurality of D/A converters, and an enabling input, whereby, when and only when an enabling pulse is given to said enabling input, a data word appearing at said data input will be stored in, and will appear at said data output of, each of said D/A latching means;

a plurality of buffer latching means for storing a single, multi-bit data word, each having a data input coupled to said data output bus, a data output coupled to said data input of one of said plurality of D/A latching means, and an enabling input, whereby, when and only when an enabling pulse is given to said enabling input, a data word appearing at said data input will be stored in, and will appear at said data output of, each of said buffer latching means;

control logic means coupled to said enabling input of each of said plurality of buffer latching means, said control logic means comprising a number of NAND gates equal to or greater than the number of D/A converters, the output of said NAND gates comprising the outputs of said control logic means, with the output of a particular NAND gate being coupled to the enabling input of the corresponding buffer latching means;

decoder logic means coupled between said control logic means and said address bus output, said decoder means comprising at least one decoder device having a number of outputs equal to or greater than the number of said D/A converters, each of said decoder outputs being coupled to a corresponding input of one of said NAND gates; and

external clock means coupled to said enabling input of each of said plurality of D/A latching means for generating clock pulses having a period between pulses greater than the processing time of said digital processing unit, whereby said digital processing unit, said plurality of D/A converters, and any of a plurality of peripheral devices coupled to said digital processing unit may be synchronized while minimizing processing delays in said digital processing unit;

said decoder logic means selecting, for a particular address word, the one of its outputs coupled to one of said NAND gates associated with the particular D/A converter of said plurality of D/A converters which corresponds to that address word, whereby the output of said NAND gate will be an enabling pulse;

said control logic means transmitting an enabling pulse to said enabling input of the particular one of said plurality of buffer latching means associated with the particular D/A converter indicated by the output of said decoder logic; thereby enabling the particular buffer latching means and, concomitantly, storing the particular data word, of said plurality of data words, appearing at the data input of the particular buffer latching means;

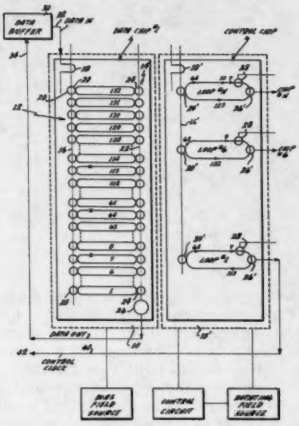
said external clock means, after the sequential storing of said plurality of said data words in the appropriate one of said plurality of buffer latching means, transmitting an enabling latching pulse to said enabling input of each of said D/A latching means; thereby, for each of said plurality of D/A latching means, simultaneously and synchronously enabling the D/A latching means, and, concomitantly, storing the data word appearing in the particular buffer latching means coupled to the D/A latching means, whereby each of said plurality of data words appears simultaneously and synchronously at the corresponding one of said plurality of D/A converters.

4,202,043

BUBBLE MEMORY DEFECT TOLERANT LOGIC CONTROL CIRCUIT

Farooq M. Quadri, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 3, 1977, Ser. No. 848,083
Int. Cl.[2] G11C *19/08*
U.S. Cl. 365—15 **5 Claims**



1. A bubble memory system having a rotating in-plane magnetic field for bubble propagation comprising:

a data chip including bubble propagation track means,

a plurality of storage loop means formed of propagate elements, some of which may be defective, for supporting bubble domains therein, a bubble or the absence of a bubble constituting bits of binary information circulating in said storage loop means in response to the rotation of said in-plane magnetic field.

data chip transfer means for each storage loop means for transferring said bits to and from said storage loop means and to and from said track means, and

detector means connected to said track means for serial detection of bits therein and generating a signal representing said bits; and

a control chip comprising bubble propagation track means,

control loop means formed of propagate elements for supporting bubble domains therein,

control chip transfer means for said control loop means for transferring bubbles to said control loop means from said track means in a preselected order so as to identify defective storage loop means, if any,

said control chip being operatively connected to said data chip but having its control transfer means independent of said data chip transfer means so that bits in said data chip do not enter said control loop means, and

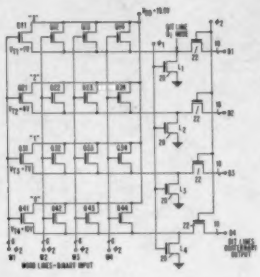
means connected to said control loop means for inhibiting identified defective loop means from contributing to the representation of said bits including detector means for the serial detection of bubbles circulating in said control loop means, a clock source having a same cyclical period as said rotating magnetic field, and means connected to said in-plane rotating magnetic field and to said clock source for preventing the transfer of bits into defective loop means and for identifying and eliminating any defective loop means positioned in the serial generation of bit signals by said detection means on said data chip.

4,202,044

QUATERNARY FET READ ONLY MEMORY

Kenneth E. Beilstein, Jr., Essex Junction, Vt., and Harish N. Kotecha, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1978, Ser. No. 915,338
Int. Cl.[2] G11C *11/40*
U.S. Cl. 365—182 **10 Claims**



1. A multilevel read only memory, comprising: a plurality of storage FET devices arranged into rows and columns, with each device having one predefined permanent threshold voltage out of N possible threshold voltages, N being greater than 2, with each FET in said row of FET devices having its drain connected to a common drain voltage and its source connected to a common bit line output and with each FET in said column of FET devices having its gate connected to a common word line input;

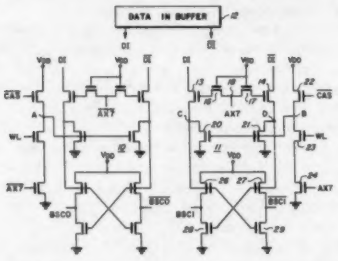
whereby a binary input signal on one of said word lines generate a one-out-of N-level signal on each of said bit lines.

4,202,045

WRITE CIRCUIT FOR A READ/WRITE MEMORY

Roger I. Kung, and Jerry D. Moench, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 5, 1979, Ser. No. 17,747
Int. Cl.[2] G11C *13/00*
U.S. Cl. 365—203 **8 Claims**



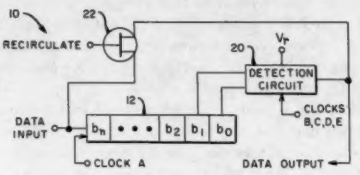
5. A circuit for controllably coupling data from an input buffer into a system, the circuit having a first and a second voltage terminal, comprising: a first and a second transistor for coupling data and its complement from the input buffer into the circuit; a third and a fourth transistor coupled in series between gate electrodes of the first and second transistors, the third and fourth transistors having gate electrodes coupled to the first voltage terminal and a first select signal coupled to a junction formed in between the third and fourth transistors; a fifth transistor having a gate electrode and being coupled between the first transistor and the second voltage terminal; a sixth transistor having a gate electrode and being coupled between the second transistor and the second voltage terminal; a seventh and an eighth transistor coupled in series between the first and second voltage terminal, and each transistor having a gate electrode; a ninth and a tenth transistor coupled in series between the first and second voltage terminals and each transistor having a gate electrode, the gate electrode of the seventh and tenth transistors being coupled to the first transistor and the gate electrodes of the ninth and eighth transistors being coupled to the second transistor; and a control signal coupled to the gate electrodes of the fifth and sixth transistors.

4,202,046

DATA STORAGE SYSTEM FOR STORING MULTILEVEL SIGNALS

William P. Ward, Poway, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 1, 1978, Ser. No. 939,021
Int. Cl.[2] G11C *19/28, 7/06*
U.S. Cl. 365—222 **12 Claims**



11. In a memory system having a charge transfer device shift register with a plurality of storage cells, with each storage cell for storing a signal having a value representing one of at least three data levels, a detection circuit for detecting the data level of the signal in one of said storage cells, comprising:

comparison means for comparing the signal in said one storage cell with the signal in an adjacent storage cell having a known data level;

summing means for adding a constant adjustment signal and an incrementally-changing adjustment signal to the signal in one of said storage cell and said adjacent storage cell prior to comparison by said comparison means; and

storing means for initially storing a signal representing the same known data level as the signal in said adjacent storage cell and for incrementally changing the value of the initially stored signal corresponding to the incrementally-changing adjustment signal until the signal stored in said storing means has a value representing the same data level as the signal in said one storage cell.

4,202,047

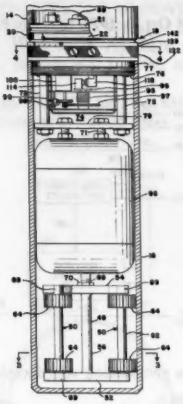
ACOUSTIC JAMMER AND TORPEDO DECOY

Vivian L. Chrisler, deceased, late of Vienna, Va. (by Cecelia B. Chrisler, executrix); William H. Gilbert, Hyattsville, and George L. Boyer, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 27, 1953, Ser. No. 339,498
Int. Cl.[2] H04K *3/00*
U.S. Cl. 367—1 **6 Claims**

1. An acoustic decoy adapted to operate underwater, said decoy comprising a motor means, a circular spindle means connected to said motor means and adapted to be rotated thereby, said spindle means having a pair of axially aligned spaced parallel discs, a plurality of radially extending sockets formed in the periphery of each disc with the sockets of respective discs being in axial alignment with each other, a roller comprising a shaft slidably and loosely supported within each pair of aligned sockets, each of said rollers comprising a pair of hammers on the associated shaft and a casing means surround-

ing said spindle means on the sides and one end thereof, said casing means comprising a cylindrical casing concentric with the axis of rotation of said spindle means, said sockets terminating radially inwardly from said casing a distance sufficient to



receive the associated shaft with its hammers spaced from said casing when said spindle means is not rotating, whereby said hammers are moved by centrifugal force to impinge against the sides of said casing whenever the spindle is rotated.

4,202,048

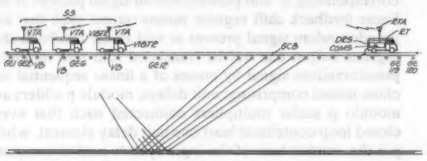
SEISMIC PROSPECTING SYSTEM

Charles M. Edwards, Pasadena, Calif., assignor to United Geophysical Corporation, Pasadena, Calif.

Continuation of Ser. No. 304,500, Nov. 7, 1972, abandoned. This application Nov. 11, 1976, Ser. No. 740,803

Int. Cl.[2] G01V *1/36, 1/30*

U.S. Cl. 367—40 **18 Claims**



1. In a system for seismic surveying in which a vehicle is moved along a line of exploration: the combination therewith of:

means including a chirp signal generator for generating a sequence of digital chirp signals and imparting a corresponding sequence of seismic chirp signals to the earth, whereby a plurality of trains of seismic waves are returned to the surface of the earth where each train of seismic waves is received at each of a plurality of geophone stations located along said line of exploration, each train of seismic waves corresponding to a different seismic chirp signal;

a seismic-wave signal conversion means for converting trains of seismic waves received at each of said plurality of geophone stations into a corresponding train of digital signals, whereby an ensemble of trains of digital signals is produced that corresponds to application of each said sequence of chirp signals to the earth,

whereby a corresponding sequence of trains of digital seismic-wave signals is created as said vehicle advances along the line of exploration, digital seismic-wave signals of different ensembles of digital seismic-wave signals corresponding to seismic waves received from common areas beneath the surface;

a digital computer system comprising a compositor computer and a correlation computer on said vehicle for receiving said ensembles of digital seismic-wave signals and processing said digital seismic-wave signals and said digital chirp signals to simultaneously form an ensemble of composited correlated digital seismic-wave records corresponding to successive common areas beneath the surface;

control means in communications with said computer system for coordinately controlling operations of said chirp generator, said compositor computer and said correlator computer in accordance with a series of parameters as said vehicle moves along the line of exploration to operate said chirp signal generator intermittently to generate a predetermined number of sequences of seismic-wave chirp signals thereby imparting said corresponding sequences of trains of seismic waves to the earth, and to form a plurality of such ensembles of composited correlated records; and

keyboard means for actuating said control means for establishing values for said parameters.

4,202,049

ULTRASONIC-FILLING POSITION LIMIT SWITCH OPERATING ACCORDING TO THE ECHO PRINCIPLE

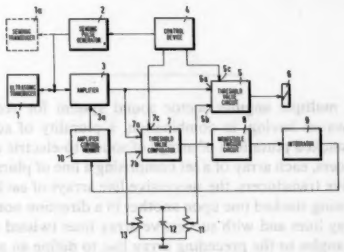
Gustav Wetzel, Loerrach, Fed. Rep. of Germany, assignor to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Sep. 20, 1978, Ser. No. 944,168

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743409

Int. Cl.[2] G01S *9/66, 7/66*

U.S. Cl. 367—96 **3 Claims**



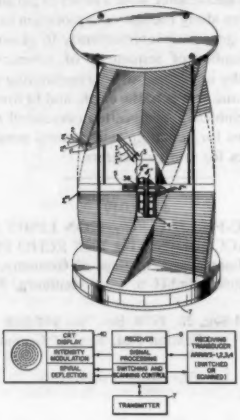
1. In an ultrasonic filling position limit switch having arranged in a container at the filling level to be attained at least one ultrasonic transducer for sending out ultrasonic pulses and for receiving echo pulses reflected off the opposite container wall, an amplifier for the electric output signals of the ultrasonic transducer connected to the ultrasonic transducer and a threshold limit switch connected to the amplifier output which supplies an output signal when the amplifier output signal exceeds a predetermined threshold value, the improvement that the amplifier output is fed back to an amplifier control input by means of an amplifier control circuit which seeks to maintain the amplifier output signal at an adjustable constant nominal value, and a control device which (a) blocks the control circuit for the duration of time in each sending period required for the sending out of the ultrasonic sending pulses and for receiving the echo pulses, (b) releases the amplifier control circuit during each sending period between the time interval provided for sending out the sending pulses and the time interval provided for receiving the echo pulses and (c) blocks the threshold limit switch during the sending out of the sending pulses and during the release time of the amplifier control circuit.

4,202,050

MULTI-ANGULAR SECTOR SOUND TRANSMITTING AND RECEIVING SYSTEM

Martin Klein, Rte. 111 - R.F.D. 2, Salem, N.H. 03079

Filed Nov. 28, 1969, Ser. No. 880,641
Int. Cl.[2] G01S 9/68, 3/84
U.S. Cl. 367—105 9 Claims



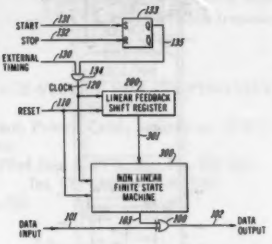
1. A multiple angular sector sound system for receiving sound waves having, in combination, a plurality of adjacent sets of stacked pluralities of arrays of sound-to-electric energy transducers, each array of a set comprising a line of plurality of successive transducers, the successive line arrays of each set of arrays being stacked one upon another in a direction normal to said array lines and with successive array lines twisted at successive angles to the preceding array line to define an angular sector over the set of arrays with each successive array line corresponding to successive angles within that sector, each set being oriented with respect to an adjacent set to define an adjacent angular sector, and means for switching successive line arrays of successive sets of arrays successively to common receiving means responsive to the electric energy transduced thereby, such that the output of the receiving means provides successive electrical signals corresponding to the sound received by the successive arrays along successive angles over the successive scanned angular sectors.

4,202,051

DIGITAL DATA ENCIPHERING AND DECIPHERING CIRCUIT AND METHOD

George I. Davida, and David L. Wells, both of Milwaukee, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 3, 1977, Ser. No. 839,034
Int. Cl.[2] H03K 9/04
U.S. Cl. 375—2 5 Claims



1. A digital data enciphering and deciphering circuit comprising:

a data input;

a clock input;

a start signal input;

a data output;

linear feedback shift register means comprising: a first input connected to said start signal input, a second input connected to said clock input, an output and means for generating at said linear feedback shift register means output a pseudorandom signal;

nonlinear finite state machine means comprising: a first input connected to said start signal input, a second input connected to said clock input, a third input connected to said output of said linear feedback shift register, an output and means for generating at said output of said nonlinear finite state machine means a nonlinear pseudorandom signal corresponding to said pseudorandom signal present at said linear feedback shift register means output such that said pseudorandom signal present at said linear feedback shift register output can not be translated into said nonlinear pseudorandom signal by means of a linear sequential machine means comprising: unit delays, module p adders and modulo p scalar multipliers connected such that every closed loop contains at least one unit delay element, where p is the number base of the logic system used to construct such a linear sequential machine, and such that the output combinations of said nonlinear finite state machine means are randomly distributed; and

combining means comprising: a first input connected to said output of said nonlinear finite state machine means, a second input connected to said data input, and output connected to said data output and means for combining said nonlinear pseudorandom signal with digital data present on said data input to generate transformed digital data on said data output.

254,876

EAR MUFFS HAVING EAR COVERINGS REPRESENTING PHONOGRAPH RECORDS

Valerie C. Reitenga, 11180 Terry, Plymouth, Mich. 48170, and Richard J. Dergis, 7089 Bonnie Dr., W., Apt. 22, Westland, Mich. 48185

Filed Sep. 19, 1977, Ser. No. 834,376
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—259

254,877

PURSE

Timmy S. Woods, 1727 Angelo Dr., Beverly Hills, Calif. 90210

Filed Feb. 6, 1978, Ser. No. 875,752
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—52

254,878

CHAIR

Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development N.V., Curacao, Netherlands Antilles

Filed May 9, 1977, Ser. No. 795,173
The portion of the term of this patent subsequent to Sep. 19, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

254,879

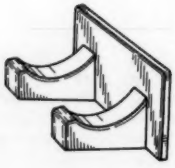
ROCKER

Leonard Eisen, Montvale, N.J., assignor to Trend Line Furniture Corporation, Amsterdam, N.Y.

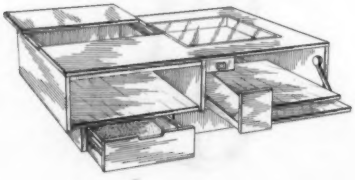
Filed Dec. 14, 1977, Ser. No. 860,426
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49

254,880
CHAIR
Max W. Durney, 180 Ely Rd., Petaluma, Calif. 94952
Filed Feb. 17, 1978, Ser. No. 879,012
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73

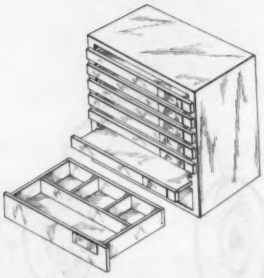
254,881
WALL-MOUNTABLE RACK FOR HOLDING A RAZOR OR THE LIKE
Alan R. Pyskaty, Glendale Heights, Ill., assignor to EPL Tool Co., Bensenville, Ill.
Filed Dec. 7, 1978, Ser. No. 967,159
Term of patent 14 years
Int. Cl. D23—*02;* D6—*04;* D8—*08*
U.S. Cl. D6—88



254,882
CABINET FOR HOUSING STEREOPHONIC AND ELECTRONIC EQUIPMENT
Bertrand Kempf, 46, rue des Martyrs, 75009 Paris, France
Filed Sep. 1, 1977, Ser. No. 829,989
Claims priority, application France, Mar. 3, 1977, 40,050
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—159

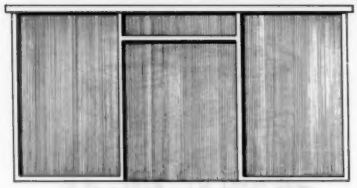


254,883
STORAGE CASE FOR STATIONERY ARTICLES OR THE LIKE
Anne-Marie Jorda-Segui, 4 Impasse Abel Varet, F-92110 Clichy, France
Filed Aug. 25, 1977, Ser. No. 828,257
Claims priority, application France, Feb. 25, 1977, 77 75476
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—165

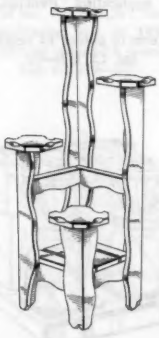


254,884
COCKTAIL TABLE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Dec. 12, 1977, Ser. No. 859,934
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175

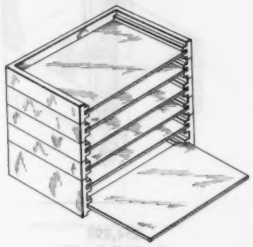
254,885
CABINET FOR HOUSING STEREO COMPONENTS
Larry L. Decker, 3421 Manchester Rd., SW., Massillon, Ohio 44646
Filed Jan. 26, 1978, Ser. No. 872,591
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—175



254,886
PLANT STAND
Alan M. Haines, 473 Mahoning Ave. NW., Warren, Ohio 44483
Filed Jan. 26, 1978, Ser. No. 873,098
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—183

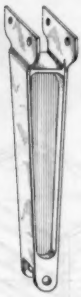


254,887
MODULAR STORAGE UNIT HAVING PULL-OUT SHELVES OR SIMILAR ARTICLE
Anne-Marie Jorda-Segui, 4 Impasse Abel Varet, F-92110 Clichy, France
Filed Aug. 25, 1977, Ser. No. 828,256
Claims priority, application France, Feb. 25, 1977, 77 75476
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



254,888
END STANDARD FOR AN AIRCRAFT SEAT
Ralph G. Marrujo, Winston-Salem, N.C., assignor to Fairchild Industries, Inc., Germantown, Md.
Filed Mar. 17, 1978, Ser. No. 887,973
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192

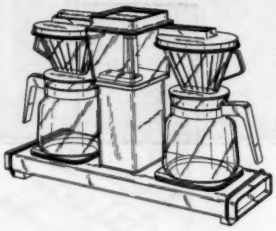
254,889
LEG FOR AN AIRCRAFT SEAT
Ralph G. Marrujo, Winston-Salem, N.C., assignor to Fairchild Industries, Inc., Germantown, Md.
Filed Mar. 17, 1978, Ser. No. 887,977
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



254,890
TABLE BASE
Robert L. Wilson, Senatobia, Miss., assignor to Chromcraft Corporation, Amsterdam, N.Y.
Filed Feb. 3, 1978, Ser. No. 874,726
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196

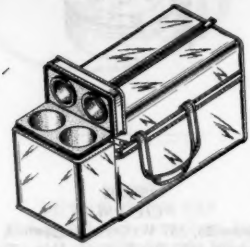
254,891
CHILD'S PILLOW
Linda J. Mills, 28 SW. 101, Oklahoma City, Okla. 73139
Filed Jul. 11, 1977, Ser. No. 814,805
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—202

254,892
COFFEEMAKER
Gerard C. Smit, Amerongen, Netherlands, assignor to Smit-design B.V., Amerongen, Netherlands
Filed Nov. 10, 1977, Ser. No. 850,413
Claims priority, application Benelux, May 13, 1977, 775189502
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—62



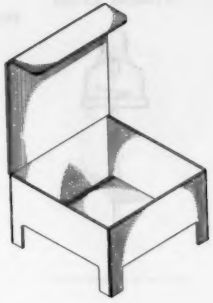
254,893
COFFEEMAKER
Gerard C. Smit, Amerongen, Netherlands, assignor to Smit-design B.V., Amerongen, Netherlands
Filed Nov. 10, 1977, Ser. No. 850,414
Claims priority, application Benelux, May 13, 1977, 775189501
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—62

254,894
COMBINED CARRYING CASE AND INSULATED BOTTLE HOLDER
Martin Zoland, 6/112 Walsh St., South Yarra, Melbourne, Australia
Filed Nov. 28, 1977, Ser. No. 855,450
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D7—77

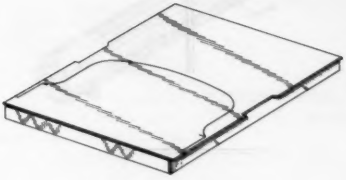


254,895
BOTTLE OR SIMILAR ARTICLE
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 662,297, Mar. 1, 1976, Pat. No. Des. 247,280. This application Feb. 14, 1977, Ser. No. 768,303
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—59

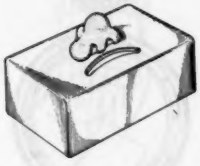
254,896
BOX
William A. Moore, 2204 Fiesta Ave., Newport Beach, Calif. 92660
Filed Aug. 11, 1977, Ser. No. 823,804
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



254,897
PAPER CASSETTE
Walter K. Jonas, 3M Deutschland GmbH, P.O. Box 643, D 4040 Neuss 1, Fed. Rep. of Germany
Filed Dec. 30, 1977, Ser. No. 866,464
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D9—224



254,898
COVER FOR FACIAL TISSUE BOX
George P. Buerk, 704 Silver Spur Rd., Rolling Hills, Calif. 90274
Filed May 15, 1978, Ser. No. 906,056
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—259



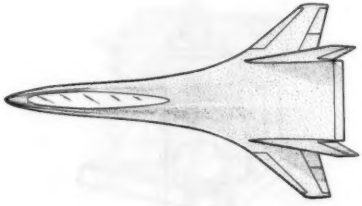
254,899
COMBINED PUMP AND CAP FOR A CONTAINER
Tetsuya Tada, 6-3, 2-chome, Kakinokizaka, Meguro-ku, Tokyo, Japan
Filed Sep. 2, 1977, Ser. No. 830,481
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—276

254,900
POCKET TIMEPIECE
Eric Oppliger, Rte. des Convers, 2616 Renan, Switzerland
Filed Apr. 11, 1977, Ser. No. 786,397
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—37

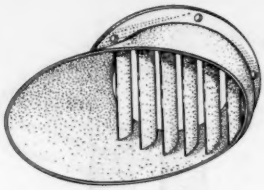
254,901
SMOKE DETECTOR
William W. Ng, Pasadena, Calif., assignor to Multirich Enterprise USA Incorporated
Filed Jan. 3, 1978, Ser. No. 866,252
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106

254,902
CHARM
Antonio M. Jaramillo, 337 W. Olive, Inglewood, Calif. 90301, and Allan Dennis, 4602 Pacific Coast Hwy., Torrance, Calif. 90505
Filed Mar. 16, 1978, Ser. No. 887,777
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—61

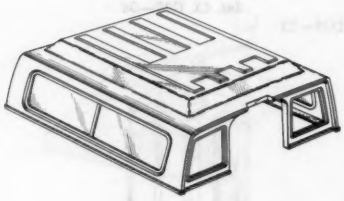
254,903
AIRCRAFT
Erling Holmen, Huntington, and Gordon Rosenthal, Jericho, both of N.Y., assignors to Fairchild Industries, Inc., Germantown, Md.
Filed Nov. 28, 1977, Ser. No. 855,596
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—71



254,904
EXHAUST STACK
Edward J. Swearingen, P.O. Box 32622, San Antonio, Tex. 78216
Filed Jan. 30, 1978, Ser. No. 873,128
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—81



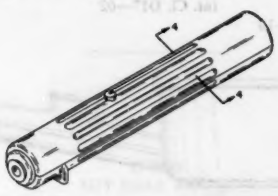
254,905
PICK-UP TRUCK CAP
John Collins, Elkhart, Ind., assignor to Leer, Inc., Ind.
Filed Mar. 27, 1978, Ser. No. 890,851
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



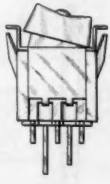
254,906
COMBINED BABY CARRIAGE AND BASKET
Shinroku Nakao, Yokohama; Kouichi Kobayashi, and Yuzo Abe, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Mar. 13, 1979, Ser. No. 20,135
Claims priority, application Japan, Nov. 20, 1978, 53-49243
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—129

254,907
AERODYNAMIC SPOILER FOR ATTACHMENT TO AN UPPER REAR PORTION OF AN AUTOMOBILE
Björn E. A. Envall, Vanersborg, and Ralph E. Jonsson, Trollhättan, both of Swedeü, assignors to Saab-Scania Aktiebolag, Trollhattan, Sweden
Filed Mar. 13, 1978, Ser. No. 886,170
Claims priority, application Sweden, Sep. 12, 1977, 771824
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181

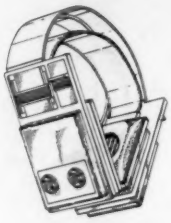
254,908
STARTER FOR SMALL ENGINES
Benjamin Bowsky; Donald E. Coyle; David W. Newman, and Larry G. Burrows, all of Cincinnati, Ohio, assignors to Emerson Electric Co., St. Louis, Mo.
Filed Sep. 21, 1977, Ser. No. 835,424
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D13—2



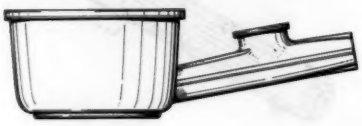
254,909
SWITCH
Minoru Sano, Yokosuka, Japan, assignor to Fujisoku Electric Co., Ltd., Kawasaki, Japan
Filed Jul. 25, 1978, Ser. No. 928,009
Claims priority, application Japan, May 19, 1978, 53-20181; May 19, 1978, 53-20182; May 19, 1978, 53-20183; May 19, 1978, 53-20184; May 19, 1978, 53-20185; Jun. 7, 1978, 53-23349
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—37



254,910
COMBINED HEADPHONE AND RADIO
Gilbert K. Lung, Kowloon, Hong Kong, assignor to Sonway Manufacturers Ltd., Kowloon, Hong Kong
Filed Nov. 4, 1977, Ser. No. 848,542
Claims priority, application United Kingdom, Oct. 4, 1977, 981781/77
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—36

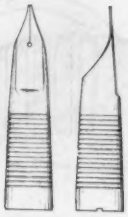


254,911
KAZOO OR SIMILAR ARTICLE
John A. Larson, Rte. #4, Box 227, Prior Lake, Minn. 55372
Filed Sep. 19, 1977, Ser. No. 834,374
Term of patent 14 years
Int. Cl. D17—*02*
U.S. Cl. D17—10

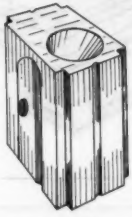


254,912
FOUNTAIN PEN
Shoichiro Ito, Hatano, Japan, assignor to Pilot Man-Nen Hitsu Kabushiki Kaisha, Tokyo, Japan
Filed May 16, 1978, Ser. No. 906,529
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—48

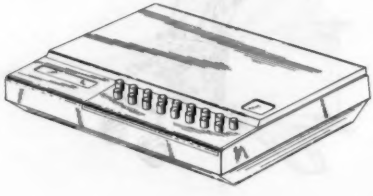
254,913
FOUNTAIN PEN NIB
Shoichiro Ito, Hatano, Japan, assignor to Pilot Man-Nen Hitsu Kabushiki Kaisha, Tokyo, Japan
Filed May 16, 1978, Ser. No. 906,530
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—55



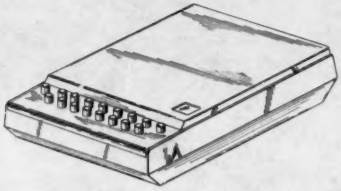
254,914
PENCIL SHARPENER
Werner Möbius, Hindenburgstrasse 77, Erlangen, Fed. Rep. of Germany
Filed Feb. 23, 1978, Ser. No. 880,352
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 7372
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—73



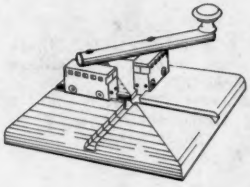
254,915
TELEPHONE INDEX OR THE LIKE
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Co., Ltd., Tokyo, Japan
Filed Dec. 30, 1977, Ser. No. 865,865
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



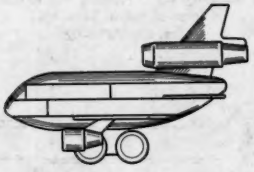
254,916
TELEPHONE INDEX OR THE LIKE
Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Co., Ltd., Tokyo, Japan
Filed Dec. 30, 1977, Ser. No. 865,866
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



254,917
DEMONSTRATION DEVICE OR THE LIKE
Noel E. Council, 3504 Woodlawn Dr., Raleigh, N.C. 27609
Filed Jan. 13, 1978, Ser. No. 869,387
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

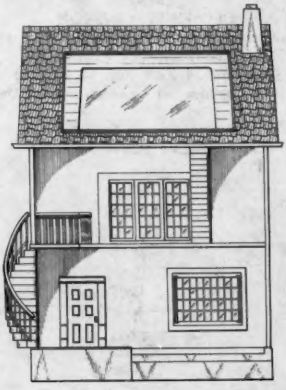


254,918
TOY AIRPLANE
Ladislav Havranek, Im Roggebode 5, 5400 Baden, Switzerland, assignor to Ladislav Havranek, Baden and Werner W. Kleeman, Thalwil, both of, Switzerland
Filed Jun. 22, 1977, Ser. No. 809,126
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



254,919
TOY STETHOSCOPE
Howard N. Bollinger; Linda J. Donaldson, and Dale I. Goldberg, all of Cincinnati, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.
Filed May 12, 1977, Ser. No. 796,083
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—109

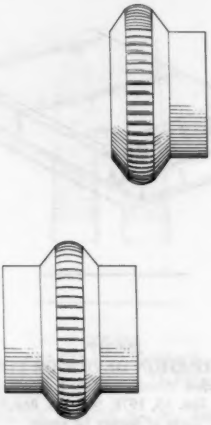
254,920
TOY DOLL HOUSE
Richard W. M. Kimbrough, New York, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 23, 1978, Ser. No. 880,855
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114



254,921
STUFFED DOLL
Ronald K. Fritkin, Rolling Meadows, Ill., assignor to Fritkin-Jones Design Group Inc., Chicago, Ill.
Filed Feb. 3, 1978, Ser. No. 874,920
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—168

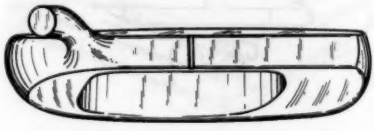
254,922
CLOWN FIGURE TOY
Norman Walker, London, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Jan. 24, 1978, Ser. No. 872,350
Claims priority, application United Kingdom, Dec. 2, 1977, 982462/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—173

254,923
ROLLING TOY OR SIMILAR ARTICLE
Robert A. Pitton, 342 Chittenden Ave., Columbus, Ohio 43201
Filed Dec. 5, 1977, Ser. No. 857,868
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—203



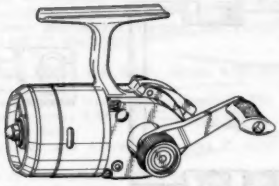
254,924
CENTER SHAFT PUTTER HEAD
Theodore N. Madison, Windsor, Conn., assignor to Questor Corporation, Toledo, Ohio
Filed May 18, 1978, Ser. No. 907,148
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219

254,925
OFF SET PUTTER HEAD
Theodore N. Madison, Windsor, Conn., assignor to Questor Corporation, Toledo, Ohio
Filed May 18, 1978, Ser. No. 907,263
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219



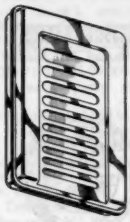
254,926
GOLF CLUB GRIP
Karsten Solheim, 501 W. Wakonda La., Phoenix, Ariz. 85023
Filed Jun. 28, 1978, Ser. No. 920,017
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—222

254,927
FISHING REEL
Yasomatsu Morishita, Hiroshima, Japan, assignor to Ryobi Ltd., Fuchu, Japan
Filed Jan. 9, 1978, Ser. No. 868,142
Claims priority, application Japan, Aug. 20, 1977, 52-33065
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



254,928
SUCTION DRAIN GUARD FOR SWIMMING POOLS
Cleo D. Mathis, 1808 Potrero Ave., South El Monte, Calif. 91733
Filed Mar. 15, 1977, Ser. No. 777,615
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—41

254,929
DISPENSER FOR AIR-FRESHENING VAPORS
Ian Butcher, Paris; Bernard Rabussier, Avanton, and Philippe Lecomte, Plaisance Vouille, all of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.
Filed Jul. 6, 1978, Ser. No. 922,466
Claims priority, application Switzerland, Jan. 6, 1978, 109,638/78
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



254,930
DISPENSER FOR AIR-FRESHENING VAPORS
Jean-Pierre Mandon, Chasseneuil-du-Poitou, and Philippe Lecomte, Plaisance Vouille, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.
Filed Jul. 6, 1978, Ser. No. 922,467
Claims priority, application Switzerland, Jan. 6, 1978, 109,623/78
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

254,931

DISPENSER FOR AIR-FRESHENING VAPORS

Jean-Pierre Mandon, Chasseneuil-du-Poitou, and Philippe Lecomte, Plaisance Vouille, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Jul. 6, 1978, Ser. No. 922,468

Claims priority, application Switzerland, Jan. 6, 1978, 109,623/78

Term of patent 14 years

Int. Cl. D23—*04*

U.S. Cl. D23—150

254,932

DISPENSER FOR AIR-FRESHENING VAPORS

Ian Butcher, Paris; Bernard Rabussier, Avanton, and Philippe Lecomte, Plaisance Vouille, all of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

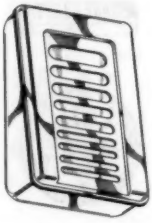
Filed Jul. 6, 1978, Ser. No. 922,469

Claims priority, application Switzerland, Jan. 6, 1978, 109,638/78

Term of patent 14 years

Int. Cl. D23—*04*

U.S. Cl. D23—150



254,933

SLIT LAMP

Ortwin Muller, Lorch, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

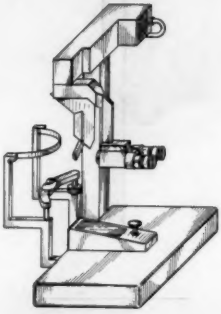
Filed Jan. 19, 1978, Ser. No. 870,738

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2860

Term of patent 14 years

Int. Cl. D24—*01*

U.S. Cl. D24—17



254,934

TRANSCUTANEOUS NERVE STIMULATOR CASE

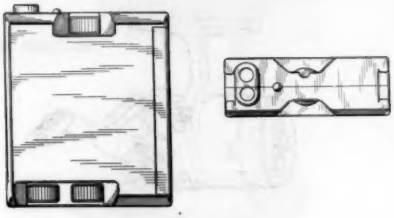
Richard L. Walus, Columbia Heights, Minn., assignor to Stimtech, Inc., Minneapolis, Minn.

Filed Jan. 17, 1979, Ser. No. 4,086

Term of patent 14 years

Int. Cl. D24—*02*

U.S. Cl. D24—36



254,935

MASCARA SHIELD

Lyn A. Staudinger, Balboa Island, Calif., assignor to Shadow Company, Glendale, Calif.

Filed Jan. 23, 1978, Ser. No. 871,419

Term of patent 14 years

Int. Cl. D28—*03*

U.S. Cl. D28—7

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF MAY, 1980

NOTE:—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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A. Raymond: *See*—
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A. Schild S.A.: *See*—
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AB Syntes: *See*—
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AB Ziristor: *See*—
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Abbott Laboratories: *See*—
Cambio, Orlando D., Jr., 4,201,208, Cl. 128-214.200.

Abbott, Thomas I., to Eastman Kodak Company. Blocked competing developers for color transfer. 4,201,578, Cl. 430-222.000.

Abrams, D. David, to Mego Corp. Toy house with roof-supporting stanchions. 4,201,010, Cl. 46-12.000.

ACEC, Ateliers de Constructions Electriques de Charleroi: *See*—
Dardenne, Regis, 4,201,940, Cl. 324-207.000.

Achterberg, Arnoldus: *See*—
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Ackerman, Gary M.; and Edgington, Nicholas, to AIT Corporation. Digital indicator. 4,200,986, Cl. 33-174.00P.

Adams, Harold R. Packing injector gun. 4,201,318, Cl. 222-324.000.

Adams, Thomas M. Lacing assembly for a shoe. 4,200,998, Cl. 36-50.000.

Adin, Anthony; and Fleming, James C., to Eastman Kodak Company. Radiation sensitive co(III)complex photoreduction element with image recording layer. 4,201,588, Cl. 430-167.000.

Adin, Anthony: *See*—
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Adolph Saurer Limited: *See*—
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Advance Dental Corporation: *See*—
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Agarwal, Maya, to Goodyear Tire & Rubber Company, The. Random copolyester adhesive resins. 4,201,859, Cl. 528-302.000.

Agarwall, Dwarika P.: *See*—
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Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
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AGFA-GEVAERT N.V.: *See*—
Monbaliu, Marcel J.; and Van Poucke, Raphael K., 4,201,584, Cl. 430-389.000.
Pollet, Robert J.; Vandeputte, Camille A.; Sels, Francis J.; and van Veelen, George F., 4,201,585, Cl. 430-376.000.

Aggio, Giordano. Container for the transport or storage of food, particularly pizza. 4,201,301, Cl. 206-507.000.

Ahamed, Syed V., to Bell Telephone Laboratories, Incorporated. Delta modulation which partitions input signal into variable-time segments that are iteratively encoded. 4,201,958, Cl. 332-11.00D.

Airco, Inc.: *See*—
Carden, Douglas D., 4,201,737, Cl. 261-142.000.

Aisan Kogyo Kabushiki Kaisha: *See*—
Ohnishi, Takanori; Shiozawa, Ken; and Shimizu, Nobuo, 4,201,734, Cl. 261-34.00B.

AIT Corporation: *See*—
Ackerman, Gary M.; and Edgington, Nicholas, 4,200,986, Cl. 33-174.00P.

Akbar, Mohammed: *See*—
Kwant, Pieter B.; Kanbier, Dirk; Tjan, Petrus W. H. L.; and Akbar, Mohammed, 4,201,659, Cl. 208-73.000.

Akita, Sigeyuki; and Wakamatsu, Hisato, to Nippon Soken, Inc. Apparatus for measuring temperature. 4,201,087, Cl. 73-339.00A.

Akiyama, Toru: *See*—
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A.G. (Patents) Limited: *See*—
Fricker, Richard; and Goswell, Robin W., 4,201,792, Cl. 426-15.000.

Al-Jalil, Hamid, to Iowa State University Research Foundation, Inc. Corn shelling device. 4,201,227, Cl. 130-8.000.

Alcorn, George E.; Bergeron, David L.; and Stephens, Geoffrey B., to International Business Machines Corp. Hardened photoresist master image mask process. 4,201,800, Cl. 430-5.000.

Aldag, John; and Wells, Willis L., to Bantam Systems, Inc. Building frame construction. 4,201,021, Cl. 52-93.000.

Aleff, Hans P. Finger actuated pump assembly. 4,201,317, Cl. 222-207.000.

Ali, Frank F. Rotary stripper device. 4,200,947, Cl. 15-198.000.

Ali, Majid; and Nalebuff, Donald J. Diagnostic test for allergic disorders and kit therefor. 4,201,221, Cl. 128-630.000.

Allain, Ronald J.; Braithwaite, David G.; and Reid, Ansell L., to Nalco Chemical Co. Boron removal from ethylene glycol-magnesium chloride solutions. 4,201,758, Cl. 423-497.000.

Alles, Harold G., to Bell Telephone Laboratories, Incorporated. Real time digital sound synthesizer. 4,201,105, Cl. 84-1.010.

Allied Chemical Corporation: *See*—
Segal, Leon, 4,201,855, Cl. 528-125.000.

Almgren, Robert, to American Loose Leaf Corp. Loose leaf binder lock and operating member therefore. 4,201,492, Cl. 402-54.000.

Alps Electric Co., Ltd.: *See*—
Tanaka, Masami; and Nomura, Yukihiko, 4,201,969, Cl. 338-180.000.

Alsdorf, Franz. Security pouch to be clipped to articles of clothing. 4,201,259, Cl. 150-47.000.

Altmayer, John, to Hustler, Inc. Tunable dipole antenna. 4,201,990, Cl. 343-747.000.

Alto Automotive, Inc.: *See*—
Vallejos, Tony E., 4,201,174, Cl. 123-188.00B.

ALZA Corporation: *See*—
Buckles, Richard G.; and Leeper, Harold M., 4,201,207, Cl. 128-214.00F.
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AM International, Inc.: *See*—
Masiello, Felix R.; and Kula, John S., 4,201,354, Cl. 242-71.700.
Seelenbinder, Terry G., 4,201,466, Cl. 355-104.000.

Amana Refrigeration, Inc.: *See*—
Schuchert, Barton O., 4,201,901, Cl. 219-10.55C.

Amariti, Luigi, to DeSoto, Inc. Liquid developers for electrostatic images comprising an aliphatic hydrocarbon, binder, polymeric carbamate and a cresol. 4,201,685, Cl. 430-114.000.

Amerace Corporation: *See*—
Goldberg, Bruce S., 4,201,838, Cl. 429-145.000.

American Can Company: *See*—
Church, John A.; Wooldridge, Derek; Burroughs, Reginald L.; Strzepek, Adolph A.; and Thompson, William J., 4,201,596, Cl. 127-37.000.
Watt, William R., 4,201,640, Cl. 204-159.110.

American Cyanamid Company: *See*—
DePaolo, George R., 4,201,803, Cl. 427-381.000.
O'Neal, Thomas D., 4,201,565, Cl. 71-76.000.

American Home Products Corporation: *See*—
Hasegawa, Jun, 4,201,866, Cl. 560-194.000.
Mack, Frank J.; and Ronayne, Walter M., 4,201,289, Cl. 206-0.500.

American Hospital Supply Corporation: *See*—
Hurt, Wesley D.; and Koski, John P., 4,201,693, Cl. 252-408.000.

American Loose Leaf Corp.: *See*—
Almgren, Robert, 4,201,492, Cl. 402-54.000.

American Zephyr Corporation: *See*—
Lagsdin, Andry, 4,201,137, Cl. 104-69.000.

Ametek, Inc.: *See*—
Bowen, John C., 4,201,190, Cl. 126-450.000.

AMF Incorporated: *See*—
Holman, Rudolph G.; and Ketchum, Frank W., 4,201,177, Cl. 124-23.00R.

Andera, Joseph F.; and Eisenberg, Robert C., to Frigitronics of Conn., Inc. Dispensing system employing liquid cryogen. 4,201,319, Cl. 222-396.000.

Anders, Jochen H.: *See*—
Huhne, Erwin D.; and Anders, Jochen H., 4,201,341, Cl. 239-79.000.

Andersen, David C. Energy conversion unit. 4,202,004, Cl. 357-30.000.

Andersen, Per F. Wave making machines. 4,201,496, Cl. 405-79.000.

Anderson, Ardis L.; and Huyser, Marvin E., to Conoco, Inc. Coal spray composition. 4,201,657, Cl. 208-23.000.

Anderson, James H. Refrigerant evaporator. 4,201,263, Cl. 165-146.000.

Anderson, Richard J.; and Henrick, Clive A., to Zoecon Corporation. 3-Isopropenyl-6-heptenoic acid. 4,201,874, Cl. 562-598.000.

Anderson, Scott. Manufacture of metal halide particles. 4,201,739, Cl. 264-13.000.

Ando, Tetsuo: *See—*
Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, 4,201,084, Cl. 73-194.0VS.

Aoi, Kunio: *See—*
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Aoyama, Masaharu; Hiraki, Shunichi; and Yonezawa, Toshio, to Tokyo Shibaura Electric Co., Ltd. Semiconductor device with multi-layered metalizations. 4,200,969, Cl. 29-577.00R.

Apatova, Larisa D.: *See—*
Kolotilo, Daniil M.; Fursov, Viktor V.; Cherevaty, Anatoly A.; Mazovsky, Nikolai D.; Goncharov, Leonid M.; and Apatova, Larisa D., 4,201,882, Cl. 13-27.000.

Applegate, Leslie T., to Surgical Appliance Industries, Inc. Knee brace. 4,201,203, Cl. 128-80.00C.

Aquafilter Corporation: *See—*
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Arai, Kozo: *See—*
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Arakawa, Jun: *See—*
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Arcair Company: *See—*
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Arendt, Henry P.; Deaton, Thomas M.; and Kohn, Gary A., to Otis Engineering Corporation. Tubing retrievable surface controlled subsurface safety valve. 4,201,363, Cl. 251-62.000.

Arendt, Ronald H.; and Curran, Matthew J., to General Electric Company. Molten salt synthesis of lithium meta-aluminate powder. 4,201,760, Cl. 423-600.000.

Armstrong, James A.; and Spector, George. No dig seepage pit cleaner. 4,201,597, Cl. 134-167.00R.

Arnold, Bruce K.: *See—*
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Artweger-Industrie-Gesellschaft m.b.H.: *See—*
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Artweger, Wolfgang, to Artweger-Industrie-Gesellschaft m.b.H. Apparatus for producing a wall. 4,201,497, Cl. 405-150.000.

Artzt, Peter; Hehl, Rudolf; Egbers, Gerhard; and Schenek, Anton, to Schubert & Salzer. Method and apparatus for cleaning fibrous material. 4,201,037, Cl. 57-301.000.

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Asdigian, George, to UOP Inc. Liquid-liquid contacting apparatus. 4,201,626, Cl. 196-14.520.

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Ashmead, Harvey H. Oil cooked foods containing metal proteinates. 4,201,793, Cl. 426-92.000.

Atkey, Richard E., to Dover Corporation. Telescopic cylinder automatic synchronizer. 4,201,053, Cl. 60-459.000.

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Atwood, Harold T. Adjustable cam metering for rotating trap type dough divider. 4,201,529, Cl. 425-238.000.

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Ausherman Manufacturing Co., Inc.: *See—*
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Backstrom, Arthur. Fishing lure. 4,201,007, Cl. 43-42.120.

Badische Corporation: *See—*
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Bainbridge, Wilfred, to Automotive Products Limited. Hydraulic master cylinder. 4,201,054, Cl. 60-562.000.

Bainbridge, Wilfred N.; and Parsons, David, to Automotive Products Limited. Hydraulic master cylinder. 4,201,055, Cl. 60-562.000.

Baird, Leslie L., to General Electric Company. Ground and test apparatus with indicia means. 4,202,028, Cl. 361-343.000.

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Barber, Jerry. Set of golf balls. 4,201,384, Cl. 273-199.00R.

Bardin, Viktor P.; Petrov, Evgeny A.; Rudelson, Viktor M.; and Sternik, Jury L. Vortex-type oil mist generator. 4,201,276, Cl. 184-55.00A.

Barker, Craig S.; and Bockwinkel, Joe L., to Shakertown Corporation. Shake panel assembling machine. 4,201,614, Cl. 156-273.000.

Barker, Larry D.; and Bannerman, James K., to Dresser Industries, Inc. Drilling fluid additive. 4,201,679, Cl. 252-8.50A.

Barner, Richard; and Schmid, Max, to Hoffmann-La Roche Inc. Hydroquinones. 4,201,879, Cl. 568-766.000.

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Barney, Howard H., to Dunn Instruments, Inc. Internal body organ motion picture synthesizing apparatus. 4,201,223, Cl. 128-653.000.

Baron, John R., to British Aircraft Corporation Limited. Conveying data signals between relatively rotatable units. 4,201,979, Cl. 340-181.000.

Barr, Thomas A., Jr.; Holloman, Miles E.; and Walters, Joseph M., to United States of America, Army. Low deactivation chemical laser. 4,201,950, Cl. 331-94.50G.

Bartholomew, Victor L., to Hudson Oxygen Therapy Sales Company. Oxygen mask. 4,201,205, Cl. 128-205.250.

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Barton, Edson K. Continuous visual display apparatus. 4,201,002, Cl. 40-524.000.

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Salje, Ernst; and Bartsch, Ulrich, 4,201,103, Cl. 83-835.000.

BASF Aktiengesellschaft: *See*—
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.
Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, 4,201,149, Cl. 118-52.000.
Kurtz, Walter; Horn, Dieter; and Ditter, Walter, 4,201,710, Cl. 260-156.000.
Schoettle, Klaus; Uhl, Karl; Wittkamp, Heinrich; Dobler, Peter; and Lewin, Helmut, 4,201,356, Cl. 242-197.000.

Basil, Berkeley; and Wooldridge, Kenneth R. H., to May & Baker Limited. Benzophenone derivatives. 4,201,790, Cl. 424-330.000.

Basile, Pedro. Pressure cooker closure fastening means. 4,201,312, Cl. 220-314.000.

Baslow, Floyd M. Fabric-covered chair rail. 4,201,359, Cl. 248-345.100.

Bass Research and Design, Inc.: *See*—
Butler, Dennis L., 4,201,182, Cl. 124-24.00R.

Battenfeld Maschinenfabriken: *See*—
Holzschuh, Johann, 4,201,533, Cl. 425-451.900.

Bauer, Adolf: *See*—
Weber, Karl-Heinz; Bauer, Adolf; and Langbein, Adolf, 4,201,712, Cl. 260-244.400.

Bauer, Josef, to Siemens Aktiengesellschaft. Test plug and sealing plug for cable fittings. 4,201,309, Cl. 220-235.000.

Bauer, Richard G.: *See*—
Mast, William C.; and Bauer, Richard G., 4,201,829, Cl. 428-332.000.

Baugh, Benton F., to Vetco, Inc. Emergency override with hermetic seal. 4,201,238, Cl. 137-68.00R.

Baumgartner, Harlow E.: *See*—
Gillespie, Herman L.; and Baumgartner, Harlow E., 4,200,944, Cl. 9-1.100.

Baumgartner, Lois C.: *See*—
Gillespie, Herman L.; and Baumgartner, Harlow E., 4,200,944, Cl. 9-1.100.

Baur, Rolf, to Schenk-Filterbau Gesellschaft mit beschrankter Haftung. Method of and device for filtering liquids. 4,201,670, Cl. 210-75.000.

Baxter Travenol Laboratories, Inc.: *See*—
Brown, Richard I.; and Leaf, Roger L., 4,201,525, Cl. 417-477.000.
Dennehey, T. Michael; and Wolf, Ludwig, Jr., 4,201,406, Cl. 285-3.000.

Bayer Aktiengesellschaft: *See*—
Dieterich, Dieter, 4,201,852, Cl. 528-67.000.
Ebneth, Harold, 4,201,825, Cl. 428-263.000.
Harnisch, Horst, 4,201,713, Cl. 546-41.000.
Imhauser, Gunter; Brauner, Dieter; and Muschelknautz, Edgar, 4,201,482, Cl. 366-98.000.
Kleimann, Helmut; von Bonin, Wulf; and Schneider, Heinz-Georg, 4,201,847, Cl. 521-172.000.
Psaar, Hubertus, 4,201,707, Cl. 260-162.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Michassouridis, Athanasios, 4,201,169, Cl. 123-124.00R.

Bayley, Richard I. Methanol vaporization and injection system for internal combustion engine. 4,201,167, Cl. 123-122.00E.

BBC Brown Boveri & Company Limited: *See*—
Muller, Klaus, 4,201,635, Cl. 204-1.00R.

Beatrice Foods Co.: *See*—
Schwitters, Stephen W.; and Aylesworth, Preston L., 4,201,558, Cl. 62-70.000.

Beck, Ralph E.: *See*—
Kolk, Michael R.; Beck, Ralph E.; and Hoyle, Roy E., 4,201,516, Cl. 416-213.00R.

Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., to Betz Laboratories, Inc. Deposit control through the use of oligomeric phosphonic acid derivatives. 4,201,669, Cl. 210-58.000.

Becker, Ormonde C. Trap loader safety assembly. 4,201,181, Cl. 124-6.000.

Becker, Otto A. Method and apparatus for manufacturing a load bearing structural element having special internal atmospheric conditions. 4,201,903, Cl. 219-78.120.

Beckman Instruments, Inc.: *See*—
Conn, Thomas E.; and Edwards, John R., 4,201,335, Cl. 233-26.000.
Louderback, Allan L., 4,201,694, Cl. 252-408.000.

Bedell, Stanley F.; Sullivan, Charles I.; and Taylor, Lloyd D., to Polaroid Corporation. Graft copolymers as diffusion control layers in photographic diffusion transfer products. 4,201,587, Cl. 430-224.000.

Beecham Group Limited: *See*—
Cassidy, Frederick; and Wootton, Gordon, 4,201,864, Cl. 560-39.000.

Beggs, Donald: *See*—
Scarlett, John C.; and Beggs, Donald, 4,201,571, Cl. 75-35.000.

Beilstein, Kenneth E., Jr.; and Kotecha, Harish N., to International Business Machines Corporation. Quaternary FET read only memory. 4,202,044, Cl. 365-182.000.

Belkind, Benjamin A., to Velsicol Chemical Corporation. 2-(1-Ethylpropylamino)-3-cyano-4-methoxymethyl-5-nitro-6-methylpyridine. 4,201,568, Cl. 71-94.000.

Bell, Henry P.: *See*—
Connors, John P.; Nordmann, Bernard J.; Wainland, David M.; and Bell, Henry P., 4,202,042, Cl. 364-900.000.

Bell & Howell Company: *See*—
Hams, Kenneth A., 4,201,378, Cl. 271-261.000.
Orsinger, Winston A.; and Reinert, Warren D., 4,201,617, Cl. 156-351.000.

Bell Telephone Laboratories, Incorporated: *See*—
Ahamed, Syed V., 4,201,958, Cl. 332-11.00D.
Alles, Harold G., 4,201,105, Cl. 84-1.010.
Beni, Gerardo; and Shay, Joseph L., 4,201,454, Cl. 350-357.000.
Cho, Alfred Y.; and Schneider, Martin V., 4,201,998, Cl. 357-15.000.
Feit, Eugene D., 4,201,580, Cl. 430-319.000.

Bellows, Alfred H.: *See*—
Ribich, William A.; Hug, Hans A.; and Bellows, Alfred H., 4,201,270, Cl. 173-43.000.

Beloit Corporation: *See*—
Mohr, William C.; Busker, Leroy H.; Francik, Carl J.; and Bergstrom, Jan I., 4,201,624, Cl. 162-205.000.

Belvin, Frank: *See*—
Duncan, Thomas P., Jr., 4,201,817, Cl. 428-141.000.

Beni, Gerardo; and Shay, Joseph L., to Bell Telephone Laboratories, Incorporated. Heat treated electrochromic devices. 4,201,454, Cl. 350-357.000.

Benisek, Ladislav, to International Wool Secretariat. Zirconium flame-resist, low smoke emission treatment. 4,201,805, Cl. 427-389.000.

Bennett, Richard N.; and Lichaa, Albert, to National Instrument Co., Inc. Anti-spilling safety device for high-speed filling machines. 4,201,251, Cl. 141-284.000.

Bergeron, David L.: *See*—
Alcorn, George E.; Bergeron, David L.; and Stephens, Geoffrey B., 4,201,800, Cl. 430-5.000.

Bergstrom, Jan I.: *See*—
Mohr, William C.; Busker, Leroy H.; Francik, Carl J.; and Bergstrom, Jan I., 4,201,624, Cl. 162-205.000.

Bergwerksverband GmbH: *See*—
Juntgen, Harald; Knoblauch, Karl; Grochowski, Horst; and Schwarte, Jurgen, 4,201,695, Cl. 252-411.00R.

Berman, Philip G.: *See*—
Feldman, Henry L.; Berman, Philip G.; and Washburn, William L., 4,201,218, Cl. 128-402.000.

Bernard, Pierre: *See*—
Delaplace, Philippe; and Bernard, Pierre, 4,201,248, Cl. 139-21.000.

Berry, Clyde F. Steam turbine governor. 4,201,520, Cl. 417-36.000.

Bertelsen, Henry F. Basis for a tabletop for an extension table. 4,201,816, Cl. 428-137.000.

Berthelon, Jean-Jacques: *See*—
Briet, Philippe; Berthelon, Jean-Jacques; and Depin, Jean-Claude, 4,201,783, Cl. 424-256.000.

Bethea, James W., III; Mitchell, O. Clayton; and Richards, George B. Method and apparatus for measuring stimulated acoustic reflex latency time. 4,201,225, Cl. 128-746.000.

Bethlehem Steel Corporation: *See*—
Chuss, David M.; and Pinckney, Benjamin H., 4,201,315, Cl. 222-66.000.
Chuss, David M.; and Scheirer, James W., 4,201,627, Cl. 201-39.000.

Betta, Walter, to WABING S.r.L. Pulley arrangement for the laying out of electrical leads in a bundle fashion. 4,201,369, Cl. 254-193.000.

Betz Laboratories, Inc.: *See*—
Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., 4,201,669, Cl. 210-58.000.

Beunders, Johan W., to U.S. Philips Corporation. Receiver having a measurement instrument which is used as a tuning scale. 4,201,944, Cl. 455-155.000.

Beyer, Douglas E.: *See*—
Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., 4,201,729, Cl. 260-665.00R.

Biasotti, Joseph B.: *See*—
Vartanian, Paul F.; and Biasotti, Joseph B., 4,201,554, Cl. 44-62.000.

Bierig, Robert W.; and Steele, S. Robert, to Raytheon Company. Process for making a negative resistance diode utilizing spike doping. 4,201,604, Cl. 148-175.000.

Bigbee, Marvin L.; Lindstrom, Harold R.; and Ryan, Edward C., to Deere & Company. Feed grinding and mixing apparatus. 4,201,348, Cl. 241-101.00B.

Bihl, Paul R.: *See*—
Krug, Martin; and Bihl, Paul R., 4,201,064, Cl. 62-239.000.

Bio-Rad Laboratories, Inc.: *See*—
Monthony, James F.; Burgett, Michael W.; and Dahlstrom, Robert V., 4,201,763, Cl. 424-8.000.

Birch, Arthur D. Portable disassemblable stand for weight lifting equipment. 4,201,380, Cl. 272-117.000.

Bizzak, Frank W., to Motorola, Inc. Pointer and scale indicating assembly. 4,201,148, Cl. 116-241.000.

Black, Milton W. Method and means for heating by wood burning. 4,201,185, Cl. 126-77.000.

Blanc, Roger; and Jorcin, Serge. Apparatus for drying boots. 4,200,993, Cl. 34-104.000.

Blanken, Thomas C.; and Schellekens, Joannes C. A., to Shell Oil Company. Bituminous carpet backing. 4,201,812, Cl. 428-95.000.

Blessing, Hubert, to Levi Strauss & Co. Sew length control and measuring apparatus. 4,201,145, Cl. 112-306.000.

Blount, David H. Process to produce allyl halides copolymers. 4,201,702, Cl. 260-28.5AS.

Bockwinkel, Joe L.: *See*—
Barker, Craig S.; and Bockwinkel, Joe L., 4,201,614, Cl. 156-273.000.

Bodkin, Lawrence E. Bow having a self held cock position. 4,201,183, Cl. 124-24.00R.

Bodlaj, Viktor, to Siemens Aktiengesellschaft. Device/process for contact free distance and thickness measurement. 4,201,475, Cl. 356-381.000.

Boehringer Ingelheim GmbH: *See*—
Chandrasekaran, Santosh K.; Darda, Siegfried; Michaels, Alan S.; and Cleary, Gary W., 4,201,211, Cl. 128-268.000.
Weber, Karl-Heinz; Bauer, Adolf; and Langbein, Adolf, 4,201,712, Cl. 260-244.400.

Boeing Company, The: *See*—
Douglas, Orva H.; and Mendoza, Quinciano G., 4,201,922, Cl. 290-38.00R.

Boeniger, Regula: *See*—
Krasnobajew, Victor; and Boeniger, Regula, 4,201,857, Cl. 525-398.000.

Bogard, William E.: *See*—
De Martelaere, David L.; and Bogard, William E., 4,201,056, Cl. 60-584.000.

Bokelmann, Horst: *See*—
Patzelt, Heinrich; and Bokelmann, Horst, 4,201,321, Cl. 222-478.000.

Bona, Constantin: *See*—
Ciorbaru nee Sfartz, Rita; Bona, Constantin; Chedid, Louis; Lederer, Edgar; and Petit, Jean-Francois, 4,201,768, Cl. 424-92.000.

Bondpers, Per-Erik: *See*—
Thomsen, Ove; and Bondpers, Per-Erik, 4,201,711, Cl. 264-157.000.

Bonomo, Melvin E., to M & W Gear Company. Pressure responsive sensing device. 4,201,081, Cl. 73-141.00R.

Bonum-Werk Inhaber Friedrich Hetzmannseder: *See*—
Hrabik, Heinrich, 4,201,296, Cl. 206-205.000.

Borg-Warner Corporation: *See*—
Halpern, Yuval; and Fleenor, Clifton T., 4,201,705, Cl. 260-45.8NT.

Bormann, Dieter; Knabe, Bernd; Schrinner, Elmar; and Worm, Manfred, to Hoechst Aktiengesellschaft. 7[(2-Amino-thiazol-4-yl)glyoxylamido]-cephem derivatives and processes for their preparation. 4,201,779, Cl. 424-246.000.

Borstelmann, Wolfgang, to Holstein und Kappert GmbH. Machine for the filling of liquids into containers. 4,201,249, Cl. 141-39.000.

Bossetti, Renato, to S.I.T.I. Societa Impianti Termoelettrici Industriali (s.a.s.). Oven for firing ceramic material or the like. 4,201,542, Cl. 432-128.000.

Bott, Theodore R.: *See*—
Ellis, Stephen R.; Bott, Theodore R.; Kay, Howard E.; and Hughes, Noel, 4,201,736, Cl. 261-98.000.

Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., to International Business Machines Corporation. Copy production machines having job separation capabilities. 4,201,464, Cl. 355-14.00R.

Bouchard, Andre C.: *See*—
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,201,540, Cl. 431-361.000.

Bouffard, Jean: *See*—
Walling, Jorg-Hein; and Bouffard, Jean, 4,201,250, Cl. 141-250.000.

Bouwhuis, Gijsbertus: *See*—
van der Wal, Johannes; and Bouwhuis, Gijsbertus, 4,201,954, Cl. 331-94.50C.

Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., to Charles Stark Draper Laboratory, Inc., The. Adaptive controller for ocean characteristic measurement system. 4,202,034, Cl. 364-420.000.

Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., to Charles Stark Draper Laboratory, Inc., The. Buoyancy control for ocean characteristic measurement system. 4,202,036, Cl. 364-420.000.

Bowen, John C., to Ametek, Inc. Solar energy collector assembly and sub-assemblies thereof. 4,201,190, Cl. 126-450.000.

Bower, David S.; and Smith, Fred J., to Digital Products Corporation. Telephone polling apparatus using a plurality of timers to detect the line conditions. 4,201,896, Cl. 179-18.00B.

Boyama, Kimihiro: *See*—
Nanjo, Hirotoshi; and Boyama, Kimihiro, 4,201,171, Cl. 123-148.0AC.

Boyce, Arthur V., Jr.: *See*—
Klingaman, Richard J.; and Boyce, Arthur V., Jr., 4,201,300, Cl. 206-45.190.

Boyer, George L.: *See*—
Chrisler, Vivian L., deceased; Gilbert, William H.; and Boyer, George L., 4,202,047, Cl. 367-1.000.

Bozal Gonzalez, Jose L. Cardiac pace-maker. 4,201,219, Cl. 128-419.0PG.

Bradley, Margaret E. Surgical apparatus for use in syringing a patient's ear. 4,201,212, Cl. 128-275.000.

Brailsford, Harry B.: *See*—
Davenport, Anthony F.; and Brailsford, Harry B., 4,201,017, Cl. 51-163.200.

Braithwaite, David G.: *See*—
Allain, Ronald J.; Braithwaite, David G.; and Reid, Ansell L., 4,201,758, Cl. 423-497.000.

Braithwaite, Dennis: *See*—
Kitchen, Roger M.; and Braithwaite, Dennis, 4,200,955, Cl. 16-106.000.

Brand, Wilhelm, to Hermann Berstorff Maschinenbau GmbH. Extrusion apparatus for manufacturing foamed thermoplastic material. 4,201,480, Cl. 366-79.000.

Brandenburg, Frank J., Jr. Method of venting heat from homes. 4,201,121, Cl. 98-33.00R.

Brandenstein, Manfred: *See*—
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,282, Cl. 192-98.000.
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,424, Cl. 308-6.00C.

Branislav, Bilen. Device for relieving the rudder shaft in ships. 4,201,146, Cl. 114-163.000.

Braun, Gunther. Vibrating roller. 4,201,493, Cl. 404-117.000.

Brauner, Dieter: *See*—
Imhauser, Gunter; Brauner, Dieter; and Muschelknautz, Edgar, 4,201,482, Cl. 366-98.000.

Breeden, Robert H.; Farrell, Robert G.; and Taylor, Henry D., to Sperry Rand Corporation. Power transmission. 4,201,052, Cl. 60-445.000.

Brems, John H. Pallet registry system. 4,201,284, Cl. 198-345.000.

Breston, Michael P.: *See*—
Stahl, Alfred R., 4,201,130, Cl. 100-271.000.

Brewer, Donaldee: *See*—
Brodie, Edwin T.; and Brewer, Donaldee, 4,201,610, Cl. 156-96.000.

Brewster, Philip W., to Exxon Research & Engineering Co. Alkanol solutions of organo molybdenum complexes as friction reducing antiwear additives. 4,201,683, Cl. 252-32.70E.

Bricker, Jack A., to PPG Industries, Inc. Position selectable glass surface temperature scanner. 4,201,563, Cl. 65-162.000.

Bridgestone Tire Company Limited: *See*—
Goshima, Norio; and Matsuda, Akira, 4,201,147, Cl. 116-34.00B.

Briet, Philippe; Berthelon, Jean-Jacques; and Depin, Jean-Claude, to Lipha Lyonnaise Industrielle Pharmaceutique. Antidepressant substituted hexahydro benzopyrano [3,2-c] pyridines. 4,201,783, Cl. 424-256.000.

Briggs, Eugene C.; and Gustafson, William E., to Keohring Company. High pressure heater. 4,201,544, Cl. 432-222.000.

Brisson, John R., to Lodal, Inc. Platen slide cover for refuse handling systems. 4,201,508, Cl. 414-525.00R.

Bristol-Myers Company: *See*—
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,201,860, Cl. 544-277.000.

British Aircraft Corporation Limited: *See*—
Baron, John R., 4,201,979, Cl. 340-181.000.

British Steel Corporation: *See*—
Hyde, Eric A., 4,201,630, Cl. 202-241.000.

Brochstein, Eugenius: *See*—
Ostersetzer, Shlomo; and Brochstein, Eugenius, 4,201,526, Cl. 418-136.000.

Brodie, Edwin T.; and Brewer, Donaldee, to Bandag Incorporated. Tire retreading method using pressure vessel. 4,201,610, Cl. 156-96.000.

Brooks, Ronald E.: *See*—
Slusarczuk, George M. J.; and Brooks, Ronald E., 4,201,831, Cl. 428-403.000.

Brouthers, Paul E., to D.W.A. Associates, Inc. Gun sight. 4,200,989, Cl. 33-257.000.

Brown, Claud L. Method of increasing extractable oleoresinous and tall oil material from pine wood. 4,201,566, Cl. 71-92.000.

Brown, Richard I.; and Leaf, Roger L., to Baxter Travenol Laboratories, Inc. Peristaltic pump. 4,201,525, Cl. 417-477.000.

Brozenske, Donald A.: *See*—
Garten, Herbert; and Brozenske, Donald A., 4,201,426, Cl. 308-26.000.

Brumlik, George C. Cellular linear filaments with transverse partitions. 4,201,813, Cl. 428-97.000.

Brunsch, Klaus: *See*—
Weiland, Emil; Schindler, Rudolf; and Brunsch, Klaus, 4,201,815, Cl. 428-113.000.

Brunswick Corporation: *See*—
Bankstahl, Herbert A., 4,201,391, Cl. 277-30.000.

Brunswick Industrial Supply Company: *See*—
Eagens, Jeffrey D., 4,201,350, Cl. 241-298.000.

Bruyere, Marcel F. M., to Societe dite: Berthiez. Machines, particularly machine-tools, driven through a gear device. 4,201,100, Cl. 82-2.00D.

Brynn, Gerald E., to General Motors Corporation. Passive lap and shoulder belt system. 4,201,401, Cl. 280-803.000.

Buchanan, Wes. Toilet seat volatile gas incinerator. 4,200,940, Cl. 4-348.000.

Bucher-Guyer AG.: *See*—
Vogt, Willy, 4,201,530, Cl. 425-260.000.

Buckles, Richard G.; and Leeper, Harold M., to ALZA Corporation. Bladder for liquid dispenser. 4,201,207, Cl. 128-214.00F.

Buggele, Alvin E. Fluid refining apparatus. 4,201,629, Cl. 202-158.000.

Bullwinkle, Benjamin B.: *See*—
Paptzun, George J.; Hall, Collin C.; and Bullwinkle, Benjamin B., 4,201,365, Cl. 251-328.000.

Bumgarner, Robert L.; and Knutson, Arthur O. Bag. 4,201,299, Cl. 206-554.000.

Bunker, David D., to Bunker Instruments, Inc. Electric stringed instrument. 4,201,108, Cl. 84-1.160.

Bunker Instruments, Inc.: *See*—
Bunker, David D., 4,201,108, Cl. 84-1.160.

Burd, John W.; Stone, Bobbie D.; Tucker, William F.; and Gupta, Kedar P., to Monsanto Company. Apparatus for zone refining. 4,201,746, Cl. 422-250.000.

Burgett, Michael W.: *See*—
Monthony, James F.; Burgett, Michael W.; and Dahlstrom, Robert V., 4,201,763, Cl. 424-8.000.

Burgoon, Jack L.; and Smith, William R., to Scott & Fetzer Company, The. Machine for cleaning surfaces. 4,200,951, Cl. 15-321.000.

Burns, Chester A., to Cordura Marketing, Inc. Data telecommunications terminal. 4,201,887, Cl. 179-2.0DP.

Burns Foods Limited of Calgary, Alberta, Canada: *See*—
Cheney, Earl J., 4,200,959, Cl. 17-32.000.

Burns, Robert V.: *See*—
Dorth, John P.; Burns, Robert V.; and Tarr, Lloyd A., 4,201,897, Cl. 179-84.00R.

Burridge, Len, Jr., to Haag, Ronald G. Combined hat and throwable amusement device. 4,201,009, Cl. 46-1.00F.

Burroughs Corporation: *See*—
Quadri, Farooq M., 4,202,043, Cl. 365-15.000.

Burroughs, Reginald L.: *See*—
Church, John A.; Wooldridge, Derek; Burroughs, Reginald L.; Strzepek, Adolph A.; and Thompson, William J., 4,201,596, Cl. 127-37.000.

Bursack, William W.; and Tromborg, Erik T., to Honeywell Inc. Sampling system for mass spectrometer. 4,201,913, Cl. 250-288.000.

Burton, Parsons & Company, Inc.: *See*—
Trager, Seymour F.; and Green, Keith, 4,201,706, Cl. 424-78.000.

Buske, Walter E.; and Hoyt, Charles W., to Wolverine Corporation. Material treatment system. 4,201,499, Cl. 406-75.000.

Busker, Leroy H.: *See*—
Mohr, William C.; Busker, Leroy H.; Francik, Carl J.; and Bergstrom, Jan I., 4,201,624, Cl. 162-205.000.

Butler, Dennis L., to Bass Research and Design, Inc. Compound bow. 4,201,182, Cl. 124-24.00R.

Byam, Peter M., to Fasco Industries, Inc. Method of manufacturing a choke control device. 4,201,735, Cl. 261-39.00E.

C.G.R. MeV: *See*—
Tronc, Dominique; and Levaillant, Claude, 4,201,920, Cl. 250-492.00B.

Calderon, Reynaldo; and Towell, Billy H., to Texaco Inc. Rotatable washer self-cleaning helical spring screen and methods. 4,201,266, Cl. 166-231.000.

Caldwell, Dan H., to Fargo Manufacturing Company, Inc. Grounding connector. 4,201,433, Cl. 339-14.00L.

California Institute of Technology: *See*—
Margolis, Jack S.; McCleese, Daniel J.; Shumate, Michael S.; and Seaman, Clay H., 4,201,468, Cl. 356-28.500.

Calmes, Jean P.: *See*—
Passoni, Teresio; Mascheroni, Alberto; and Calmes, Jean P., 4,201,097, Cl. 74-529.000.

Calvert, Rodney K.; and Fishback, Alton J., to Mead Corporation, The. Machine for manipulating a collapsed basket style carton into set-up condition and for adhering end flaps to end panels at each end of the carton. 4,201,118, Cl. 93-39.00R.

Cambio, Orlando D., Jr., to Abbott Laboratories. Sterile connecting device. 4,201,208, Cl. 128-214.200.

Camco, Incorporated: *See*—
Thomason, James M.; and Logan, Francis D., 4,201,265, Cl. 166-117.500.

Cameron Iron Works, Inc.: *See*—
Troxell, John N., Jr., 4,201,242, Cl. 137-531.000.

Campbell, Gerald A.; Cohen, Hyman; Hamilton, Lewis R.; and Villard, George, to Eastman Kodak Company. Photographic film units containing a polymeric mordant which covalently bonds with certain dyes. 4,201,840, Cl. 430-17.000.

Campion, John S.; and Steed, Van E. Screen. 4,201,449, Cl. 350-117.000.

Canada-Cities Service, Ltd.: *See*—
Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Kuehn, Lorne A.; and Pogorski, Louis A., 4,201,206, Cl. 128-201.130.

Canon Kabushiki Kaisha: *See*—
Harigaya, Isao; Taguchi, Tetsuya; Ito, Fumio; and Yazaki, Mutsunobu, 4,201,463, Cl. 354-86.000.
Hoshito, Kazuo; Sato, Hideaki; Kitamura, Takashi; and Masegi, Koichi, 4,201,994, Cl. 346-108.000.
Matsumoto, Masakazu; Yokono, Koujiro; Tanaka, Takashi; Toganou, Shigeo; Kishi, Hiroyoshi; and Nishide, Katsuhiko, 4,201,441, Cl. 350-3.610.

Canron Corporation: *See*—
Shupe, Charles A., 4,201,602, Cl. 148-146.000.

Cantelon, Ruth F. Game apparatus. 4,201,388, Cl. 273-251.000.

Carballes, Jean-Claude, to Thomson-CSF. Diode capable of alternately functioning as an emitter and detector of light of the same wavelength. 4,202,000, Cl. 357-19.000.

Carbone, Victor T.: *See*—
Clark, Stephen C.; and Carbone, Victor T., 4,201,905, Cl. 219-121.00L.

Carden, Douglas D., to Airco, Inc. Nebulizing apparatus. 4,201,737, Cl. 261-142.000.

Carl Schenck AG: *See*—
Guyot, Volker; Maus, Otfrid; and Mueller, Martin, 4,201,091, Cl. 73-462.000.

Carl Zeiss-Stiftung: *See*—
Kurbitz, Gunther; Wegener, Walter; and Weinheimer, Hans-Richard, 4,201,931, Cl. 315-10.000.

Carlson, Robert E., to TRW Inc. Pump and motor assembly. 4,201,521, Cl. 417-53.000.

Carlton, Christopher F. Symmetrical speaker having structural reinforcing ports. 4,201,274, Cl. 181-156.000.

Caron, LaVerne A., to Chrysler Corporation. Electronic circuit for use in a variety of engine control systems. 4,201,926, Cl. 307-141.000.

Carpenter Technology Corporation: *See*—
Henthorne, Michael; and DeBold, Terry, 4,201,575, Cl. 75-122.000.

Carr, Harold F., Jr.; and Humphries, David F., to Ernest Holmes Division Dover Corporation. Towing apparatus. 4,201,399, Cl. 280-402.000.

Carrier Corporation: *See*—
Griffin, Charles K., 4,201,065, Cl. 62-510.000.
Heffernan, Edward J., 4,201,061, Cl. 62-98.000.
Kolk, Michael R.; Beck, Ralph E.; and Hoyle, Roy E., 4,201,516, Cl. 416-213.00R.

Carswell, William: *See*—
Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; and Carswell, William, 4,201,283, Cl. 194-1.00A.

Carter, James G.: *See*—
Christophorou, Loucas G.; McCorkle, Dennis L.; Maxey, David V.; and Carter, James G., 4,201,692, Cl. 252-372.000.

Case, Marianna. Towel having inflatable pillow incorporated therein. 4,200,942, Cl. 5-419.000.

Case, Richard P., to White Consolidated Industries, Inc. Electronic liquid level monitor and controller. 4,201,240, Cl. 137-392.000.

Cassidy, Frederick; and Wootton, Gordon, to Beecham Group Limited. Oxy-alkylamino acids and esters. 4,201,864, Cl. 560-39.000.

Castleman, B. Wayne, to United States of America, Air Force. Anode assisted sputter etch and deposition apparatus. 4,201,654, Cl. 204-298.000.

Castolin GmbH: *See*—
Huhne, Erwin D.; and Anders, Jochen H., 4,201,341, Cl. 239-79.000.

Caterpillar Tractor Co.: *See*—
Muntjanoff, John R., 4,201,510, Cl. 414-730.000.

Cathell, Franklin J., to Qualidyne Systems, Inc. Power inverter having parallel switching elements. 4,201,957, Cl. 331-110.000.

Celanese Corporation: *See*—
Hannon, Martin J.; and Greene, Richard K., 4,201,834, Cl. 428-407.000.
Hughes, O. Richard, 4,201,714, Cl. 260-340.90R.
Hughes, O. Richard, 4,201,728, Cl. 568-454.000.
Nowak, Michael T., 4,201,642, Cl. 204-159.170.
Slinkard, William E., 4,201,868, Cl. 560-232.000.

Cemsto B.V.: *See*—
Smies, Jan F.; and Dijkmans, Leo, 4,200,952, Cl. 15-322.000.

Cerla N.V.: *See*—
Marynowski, Chester W.; Lewis, F. Michael; Lapple, Charles E.; Murray, Robert G.; and Semrau, Konrad T., 4,201,512, Cl. 415-90.000.

Cessna Aircraft Company, The: *See*—
Martin, Robert J., 4,201,116, Cl. 91-387.000.

Chalmers, Walter M., to Ferranti Limited. Electric connectors. 4,201,432, Cl. 339-14.00R.

Chamberlain, Neal C., to FMC Corporation. Automatic corn cutter feeder. 4,201,285, Cl. 198-400.000.

Champion International Corporation: *See*—
Austin, John J., 4,201,331, Cl. 229-39.00R.
Roccaforte, Harry I., 4,201,294, Cl. 206-45.140.
Roccaforte, Harry I., 4,201,329, Cl. 229-17.0SC.

Chan, Ka-Kong; and Pawson, Beverly A., to Hoffmann-La Roche Inc. Fluorinated aromatic polyenes. 4,201,727, Cl. 568-442.000.

Chandler, Ronald W.: *See*—
Mueller, Frederick N.; and Chandler, Ronald W., 4,200,982, Cl. 33-126.600.

Chandrasekaran, Santosh K.; Darda, Siegfried; Michaels, Alan S.; and Cleary, Gary W., to ALZA Corporation; and Boehringer Ingelheim GmbH. Therapeutic system for administering clonidine transdermally. 4,201,211, Cl. 128-268.000.

Chang, Chin H.: *See*—
Savage, David W.; Chang, Chin H.; and Longo, John M., 4,201,665, Cl. 210-32.000.

Charbonneau, Jack W.; Law, Richard S.; Ludwig, Willis J.; and Otteson, Wayne O., to Minnesota Mining and Manufacturing Company. Pressure-sensitive marking materials. 4,201,404, Cl. 282-27.500.

Charles, Georges M., to Potain Poclain Materiel (P.P.M.). Device for handling containers. 4,201,511, Cl. 414-738.000.

Charles, Paul A. S. Solar heat collector with channeled panel. 4,201,194, Cl. 126-449.000.

Charles Stark Draper Laboratory, Inc., The: *See*—
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,034, Cl. 364-420.000.
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,036, Cl. 364-420.000.

Chedid, Louis: *See*—
Ciorbaru nee Sfartz, Rita; Bona, Constantin; Chedid, Louis; Lederer, Edgar; and Petit, Jean-Francois, 4,201,768, Cl. 424-92.000.

Chellis, Leroy N.; and Ellis, Theron L., to International Business Machines Corporation. Dimensionally stable laminated printed circuit cores or boards and method of fabricating same. 4,201,616, Cl. 156-307.100.

Chen, Chia-Ming. Phenol-aldehyde resin composition containing pecan pith extract and an aldehyde. 4,201,699, Cl. 260-7.000.

Chen, Chia-Ming. Phenol-aldehyde resin composition containing peanut hull extract and an aldehyde. 4,201,700, Cl. 260-7.000.

Chen, Chia-Ming. Organic phenol extract compositions of pecan pith agricultural residues and method. 4,201,851, Cl. 528-1.000.

Chen, Kuang S.: *See*—
Wan, Jeffrey K. S.; and Chen, Kuang S., 4,201,638, Cl. 204-158.00R.
Cheney, Earl J., to Burns Foods Limited of Calgary, Alberta, Canada. Apparatus for forming bacon product analogues and the like. 4,200,959, Cl. 17-32.000.
Cherevaty, Anatoly A.: *See*—
Kolotilo, Daniil M.; Fursov, Viktor V.; Cherevaty, Anatoly A.; Mazovsky, Nikolai D.; Goncharov, Leonid M.; and Apatova, Larisa D., 4,201,882, Cl. 13-27.000.
Cheung, Tak M.: *See*—
Horton, Derek; Weckerle, Wolfgang; Fuchs, Ernst F.; Cheung, Tak M.; Winter, Beat; and Sorenson, Roderick J., 4,201,773, Cl. 424-180.000.
Chevron Research Company: *See*—
Jensen, Harbo P., 4,201,658, Cl. 208-39.000.
Chippewa Paper Products Corporation: *See*—
Melehan, George, 4,201,028, Cl. 53-137.000.
Cho, Alfred Y.; and Schneider, Martin V., to Bell Telephone Laboratories, Incorporated. Devices with Schottky metal contacts filling a depression in a semi-conductor body. 4,201,998, Cl. 357-15.000.
Chouteau, Jacques; and Magne, Pierre, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Process for treating a flow of tobacco leaves. 4,201,229, Cl. 131-146.000.
Chrisler, Cecelia B., executrix: *See*—
Chrisler, Vivian L., deceased; Gilbert, William H.; and Boyer, George L., 4,202,047, Cl. 367-1.000.
Chrisler, Vivian L., deceased (by Chrisler, Cecelia B., executrix); Gilbert, William H.; and Boyer, George L., to United States of America, Navy. Acoustic jammer and torpedo decoy. 4,202,047, Cl. 367-1.000.
Christophorou, Loucas G.; McCorkle, Dennis L.; Maxey, David V.; and Carter, James G., to United States of America, Energy. Gas mixtures for gas-filled particle detectors. 4,201,692, Cl. 252-372.000.
Chrysler Corporation: *See*—
Caron, LaVerne A., 4,201,926, Cl. 307-141.000.
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P. Method of rolling section billets. 4,201,075, Cl. 72-204.000.
Church, John A.; Wooldridge, Derek; Burroughs, Reginald L.; Strzepek, Adolph A.; and Thompson, William J., to American Can Company. Continuous process for cellulose saccharification. 4,201,596, Cl. 127-37.000.
Church, Shirley L.; and Hilts, Loren M., to Goodyear Tire & Rubber Company, The. Separation apparatus. 4,201,628, Cl. 202-158.000.
Chuss, David M.; and Pinckney, Benjamin H., to Bethlehem Steel Corporation. Empty hopper detector. 4,201,315, Cl. 222-66.000.
Chuss, David M.; and Scheirer, James W., to Bethlehem Steel Corporation. Coke quenching practice for one-spot cars. 4,201,627, Cl. 201-39.000.
Ciabatti, Romeo: *See*—
Guzzi, Umberto; and Ciabatti, Romeo, 4,201,865, Cl. 560-121.000.
Ciavatta, Vitale G., to Mare Corporation. Amino acid-vitamin formulations for skin, hair and scalp conditioners. 4,201,235, Cl. 132-7.000.
Ciba-Geigy Corporation: *See*—
Daly, James E., 4,201,762, Cl. 423-633.000.
Zondler, Helmut; and Lehmann, Hans, 4,201,854, Cl. 528-121.000.
Ciorbaru nee Sfartz, Rita; Bona, Constantin; Chedid, Louis; Lederer, Edgar; and Petit, Jean-Francois, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for obtaining agents having mitogenic and/or adjuvant properties from Nocardia cells and compositions containing such agents. 4,201,768, Cl. 424-92.000.
Cirami, Salvatore, to Myles, Jack, a part interest. Semi-automatic gear-shift for dual derailleur bicycle. 4,201,095, Cl. 74-217.00B.
Citizen Watch Co., Ltd.: *See*—
Nakayama, Yasuaki, 4,201,040, Cl. 368-35.000.
Clark, Stephen C.; and Carbone, Victor T., to Houdaille Industries, Inc. Laser cutting head attachment for punch presses. 4,201,905, Cl. 219-121.00L.
Clark, William E., to Continental Oil Company. Method for the conversion of calcium sulfoxy compounds into calcium carbonate compounds in sulfur oxide treatment processes. 4,201,754, Cl. 423-242.000.
Clark, William E., to Continental Oil Company. Method for regenerating calcium sulfoxy compounds produced in the combustion of carbonaceous fuels in fluidized beds. 4,201,759, Cl. 423-567.00A.
Cleary, Gary W.: *See*—
Chandrasekaran, Santosh K.; Darda, Siegfried; Michaels, Alan S.; and Cleary, Gary W., 4,201,211, Cl. 128-268.000.
Coal Industry (Patents) Limited: *See*—
Randell, Arthur A.; and Hodgkinson, Norman, 4,201,676, Cl. 252-1.000.
Coastal Abrasive & Tool Company Inc.: *See*—
Roth, Robert B., 4,200,965, Cl. 29-81.00J.
Cobb, Clyde E.; and Muths, Donald A., to Textron Inc. Electrohydraulic servovalve having removably attached feedback element. 4,201,114, Cl. 91-3.000.
Cobeen, Charles P.: *See*—
Friedman, Stanley I.; Cobeen, Charles P.; and Jacobsthal, Herbert K., 4,201,980, Cl. 340-347.0DD.
Codman & Shurtleff, Inc.: *See*—
Oser, Zale, 4,200,939, Cl. 3-1.900.
Townsend, Paul R., 4,201,213, Cl. 128-312.000.
Coe, Noel N.: *See*—
Saeman, Walter C.; Coe, Noel N.; and Faust, John P., 4,201,756, Cl. 423-266.000.
Coen Company, Inc.: *See*—
Voorheis, Temple S., 4,201,539, Cl. 431-354.000.
Cohen, Hyman: *See*—
Campbell, Gerald A.; Cohen, Hyman; Hamilton, Lewis R.; and Villard, George, 4,201,840, Cl. 430-17.000.
Cohen, Noal; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Intermediates for steroid total synthesis process utilizing asymmetric induction. 4,201,869, Cl. 560-255.000.
Cohen, Stuart C.; and Rosenquist, Niles R., to General Electric Company. Flame-retarded thermoplastic polyester compositions having improved arc resistance and process for preparing same. 4,201,704, Cl. 260-40.00R.
Cole, Bernard M. Spray decoration. 4,201,806, Cl. 428-4.000.
Cole, Robert J. Extrusion dies of spiral mandrel type. 4,201,532, Cl. 425-380.000.
Colgate-Palmolive Company: *See*—
Fischer, Charles F.; and Marchesani, Cesare N., 4,201,528, Cl. 425-209.000.
Klingaman, Richard J.; and Boyce, Arthur V., Jr., 4,201,300, Cl. 206-45.190.
Klingaman, Richard J., 4,201,316, Cl. 222-80.000.
Perla, Guilio; and D'Arcangeli, Alessandro, 4,201,743, Cl. 264-148.000.
Colite Industries, Inc.: *See*—
Witt, Frank A., 4,201,003, Cl. 40-545.000.
Witt, Frank A., 4,201,004, Cl. 40-545.000.
College Research Corporation: *See*—
Evans, Marvin; and Miller, David H., 4,201,370, Cl. 266-44.000.
Collier, David L. Cabinet drawer guide and slide connector. 4,201,429, Cl. 312-330.00R.
Combustion Engineering, Inc.: *See*—
Nofal, Abb A., 4,201,755, Cl. 423-242.000.
Combustion Equipment Associates, Inc.: *See*—
Lyshkow, Norman A.; and Lewis, David F., 4,201,551, Cl. 44-1.00D.
Cominco Ltd.: *See*—
Swinkels, Godefridus M.; and Maschmeyer, Dennis G., 4,201,748, Cl. 423-27.000.
Commissariat a l'Energie Atomique: *See*—
Saglio, Robert, 4,201,971, Cl. 367-95.000.
Communications Satellite Corporation: *See*—
Welti, George R., 4,201,963, Cl. 333-106.000.
Welti, George R., 4,201,992, Cl. 343-840.000.
Compagnie Francaise de Raffinage: *See*—
Legendre, Michel; and Engelhard, Philippe, 4,201,696, Cl. 252-442.000.
Compagnie Internationale pour l'Informatique: *See*—
Gosset, Cyrille; and Thomas, Jean-Marc, 4,201,488, Cl. 400-121.000.
Condec Corporation: *See*—
Phipps, Arthur L., 4,201,534, Cl. 425-461.000.
Coney, Charles H., to Eastman Kodak Company. Dielectric coating compositions from polyesters and rosin esters. 4,201,701, Cl. 260-22.0CQ.
Conn, Thomas E.; and Edwards, John R., to Beckman Instruments, Inc. Microtest plate carrier overspeed protection device. 4,201,335, Cl. 233-26.000.
Connell, Talbert D., to Crutcher Resources Corporation. Pivotal back-up pads for welding. 4,201,326, Cl. 228-50.000.
Connors, John P.; Nordmann, Bernard J.; Wainland, David M.; and Bell, Henry P., to United States of America, Navy. Digital to analog interface for simultaneous analog outputs. 4,202,042, Cl. 364-900.000.
Conoco, Inc.: *See*—
Anderson, Ardis L.; and Huyser, Marvin E., 4,201,657, Cl. 208-23.000.
Peterson, Marvin L.; and Maxson, Orwin G., 4,201,637, Cl. 204-148.000.
Continental Group, Inc., The: *See*—
Hekal, Ihab M., 4,201,664, Cl. 210-23.00H.
Continental Oil Company: *See*—
Clark, William E., 4,201,754, Cl. 423-242.000.
Clark, William E., 4,201,759, Cl. 423-567.00A.
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,201,655, Cl. 208-8.0LE.
Contronic Controls Limited: *See*—
Humphries, Peter E., 4,201,982, Cl. 340-506.000.
Cook, John S., to Mattel, Inc. Toy motorcycle. 4,201,011, Cl. 46-209.000.
Copeland, James S.; and Primm, Raymond, to Innovation Industries, Inc. Photosensor assembly. 4,201,910, Cl. 250-216.000.
Cordura Marketing, Inc.: *See*—
Burns, Chester A., 4,201,887, Cl. 179-2.0DP.
Corinth Co. Inc.: *See*—
Frantello, Alfred A., 4,201,034, Cl. 56-295.000.
Corning Glass Works: *See*—
Pierson, Joseph E.; and Tarcza, Walter H., 4,201,561, Cl. 65-30.00R.
Rittler, Hermann L., 4,201,559, Cl. 65-2.000.
Corrigan, Francis R., to General Electric Company. Large boron nitride abrasive particles. 4,201,757, Cl. 423-290.000.
Costruzioni Meccaniche Lonati S.p.A.: *See*—
Lonati, Francesco, 4,201,067, Cl. 66-222.000.

Cotton, John M.: *See—*
Lawrence, Alan J.; Cotton, John M.; Hamer-Hodges, Kenneth J.; and Denenberg, Jeffrey N., 4,201,889, Cl. 320-68.000.
Lawrence, Alan J.; Cotton, John M.; and Denenberg, Jeffrey N., 4,201,891, Cl. 370-58.000.

Couch, Philip R.; and Philpott, David A., to International Standard Electric Corporation. Digital data transmission system. 4,201,884, Cl. 375-53.000.

Coverley, Roger D. Large area cleaning system. 4,200,950, Cl. 15-314.000.

Cowsar, Donald R., to United States of America, Army. Novel fabric containing microcapsules of chemical decontaminants encapsulated within semipermeable polymers. 4,201,822, Cl. 428-240.000.

Cox, Clayton E. Cornerboard for pallets. 4,201,138, Cl. 108-55.100.

Cox, John W., to Transworld Drilling Company. Submersible pipe installation systems. 4,201,074, Cl. 72-168.000.

Coxon, DeWayne A.; and Gates, Timothy P., to Jordan College. Solar heat air system. 4,201,192, Cl. 126-422.000.

Coyne, Roy J.: *See—*
Lombardi, Louis J.; and Coyne, Roy J., 4,201,842, Cl. 430-281.000.

Crankshaw, Michael; and Kucheck, Leo, to Label-Aire Inc. Label applicator for irregularly shaped articles. 4,201,621, Cl. 156-567.000.

Crawford, Henry; and Jessiman, Alexander F., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Release hook assemblies. 4,201,410, Cl. 294-83.00R.

Crawford, Kenneth Z., to Polycarrier Company. Bottle carrier. 4,201,322, Cl. 224-45.0AB.

Crawford, Lynn D.: *See—*
Watts, Paul J.; Crawford, Lynn D.; and Nichols, Philip T., 4,201,237, Cl. 135-2.000.

Creatcchnil Patent AG: *See—*
Zapp, Walter, 4,201,489, Cl. 400-485.000.

Crossett, E. S.; and McCormick, Willard L. Apparatus and method for closing a severed sternum. 4,201,215, Cl. 128-335.000.

Croucher, Robert L.; and Robson, Ernest G. Earth moving equipment. 4,201,001, Cl. 37-190.000.

Crowe, Robert E. Installing panels of interlocking blocks. 4,201,494, Cl. 405-17.000.

Crutcher Resources Corporation: *See—*
Connell, Talbert D., 4,201,326, Cl. 228-50.000.

Crutchfield, Marvin M.; Langguth, Robert P.; and Mayer, James M., to Monsanto Company. Chloroimide fabric bleaches. 4,201,687, Cl. 252-102.000.

Crutchfield, Marvin M.; and Upton, Charles J., to Monsanto Company. Method of preparing polyacetal carboxylates. 4,201,858, Cl. 528-232.000.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Dogliotti, Renato; and Pirani, Giancarlo, 4,201,909, Cl. 455-608.000.

Cully, Maryann; Pines, Arthur N.; Metzler, Richard B.; and Babian, Gunther W., to Union Carbide Corporation. Radiation curable silicone release compositions. 4,201,808, Cl. 428-40.000.

Culver, Irven H.; and Szymber, Oleg, to Primus Mfg., Inc. Visual indicator for alternate units of measure. 4,200,985, Cl. 33-141.00R.

Cummings, Richard D., to Exxon Research & Engineering Co. Solar collector and heat trap. 4,201,188, Cl. 126-429.000.

Curran, Matthew J.: *See—*
Arendt, Ronald H.; and Curran, Matthew J., 4,201,760, Cl. 423-600.000.

Currell, Herbert H. Methods of and apparatus for manufacturing pile fabrics. 4,201,608, Cl. 156-72.000.

Curtius, Horst: *See—*
Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst, 4,201,547, Cl. 8-543.000.

Cycowicz, Izchak: *See—*
Gill, Glenn G.; and Cycowicz, Izchak, 4,200,941, Cl. 5-13.000.

Czerwinski, Watson P., to United States of America, Army. Wideband antenna with frequency dependent ferrite core inductor. 4,201,989, Cl. 343-715.000.

D.W.A. Associates, Inc.: *See—*
Brouthers, Paul E., 4,200,989, Cl. 33-257.000.

Daane, Robert A.: *See—*
Stibbe, Paul H.; and Daane, Robert A., 4,201,323, Cl. 226-97.000.

Dahlen, John M.: *See—*
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,034, Cl. 364-420.000.
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,036, Cl. 364-420.000.

Dahlstrom, Robert V.: *See—*
Monthony, James F.; Burgett, Michael W.; and Dahlstrom, Robert V., 4,201,763, Cl. 424-8.000.

Daimler-Benz Aktiengesellschaft: *See—*
Reidelbach, Willi; and Schmid, Walter, 4,201,418, Cl. 297-474.000.

Dainippon Jochugiku Kabushiki Kaisha: *See—*
Katsuda, Yoshio; and Minamite, Yoshihiro, 4,201,787, Cl. 424-304.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Tomita, Masatsugu; Takase, Yoshiyuki; and Komiya, Toshio, 4,201,781, Cl. 424-246.000.

Daly, James E., to Ciba-Geigy Corporation. Transparent red iron oxide pigments and process for producing same. 4,201,762, Cl. 423-633.000.

Damerau, Herbert R. Liquid filter with novel seal means. 4.201,675, Cl. 210-387.000.

Damon Corporation: *See—*
Nolan, Thomas E., Jr., 4,201,066, Cl. 64-1.00V.

D'Angelo, Augustino. Toothbrush. 4,201,490, Cl. 401-175.000.

Danko, Oliver L.; Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; and Kish, Edward E. Bellows valve. 4,201,366, Cl. 251-335.00B.

D'Arcangeli, Alessandro: *See—*
Perla, Guilio; and D'Arcangeli, Alessandro, 4,201,743, Cl. 264-148.000.

Darda, Siegfried: *See—*
Chandrasekaran, Santosh K.; Darda, Siegfried; Michaels, Alan S.; and Cleary, Gary W., 4,201,211, Cl. 128-268.000.

Dardenne, Regis, to ACEC, Ateliers de Constructions Electriques de Charleroi. Method and apparatus for measuring the position of regulating rods in a nuclear reactor. 4,201,940, Cl. 324-207.000.

Darley, Henry M.; Houston, Theodore W.; and Kruger, James B., to Texas Instruments Incorporated. MESFET semiconductor device and method of making. 4,201,997, Cl. 357-15.000.

Darley, Henry M.; Houston, Theodore W.; and Yuan, Han T., to Texas Instruments Incorporated. MESFET Semiconductor device and method of making. 4,202,003, Cl. 357-15.000.

Data Management, Incorporated: *See—*
Aziz, Paul D.; and Hincks, Robert W., 4,201,402, Cl. 282-9.00A.

Datwyler, Max, to Max Datwyler & Co. Package arrangement for a doctor blade, especially for an intaglio or gravure printing doctor. 4,201,297, Cl. 206-349.000.

Dau, Gary J., to Electric Power Research Institute, Inc. Method of detecting and monitoring a leak caused by a through wall crack in a high pressure fluid system. 4,201,092, Cl. 73-587.000.

Dauvarte, Anda Z.: *See—*
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.

Davenport, Anthony F.; and Brailsford, Harry B., to William Boulton Limited. Methods and apparatus for the treatment of products. 4,201,017, Cl. 51-163.200.

Davida, George I.; and Wells, David L., to Wisconsin Alumni Research Foundation. Digital data enciphering and deciphering circuit and method. 4,202,051, Cl. 375-2.000.

Davidson, Bruce L.: *See—*
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,201,780, Cl. 424-246.000.

Davidson, Thomas L., to Robertson Paper Box Co., Inc. Display carton. 4,201,291, Cl. 206-44.00R.

Davidson, Thomas L.; and Gonet, Charles F., to Robertson Paper Box Co., Inc. Dispenser carton. 4,201,292, Cl. 206-44.00R.

Davidson, William M. Buoyant instrument case and holder. 4,201,090, Cl. 73-431.000.

Davis, Philip S.: *See—*
Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., 4,201,669, Cl. 210-58.000.

Day, Flory M. Cutting tool. 4,201,501, Cl. 407-92.000.

Dayen, William R., to Gilbert Associates, Inc. Flue gas desulfurization process. 4,201,753, Cl. 423-242.000.

db Systems Ltd.: *See—*
Balde, Dan R., 4,201,278, Cl. 191-12.400.

De La Moneda, F. H., to International Business Machines Corporation. Ion-implanted layers with abrupt edges. 4,202,002, Cl. 357-22.000.

Dean, Edward H.: *See—*
Figge, Irving E.; and Dean, Edward H., 4,201,612, Cl. 156-224.000.

Deaton, Thomas M.: *See—*
Arendt, Henry P.; Deaton, Thomas M.; and Kohn, Gary A., 4,201,363, Cl. 251-62.000.

Debiec, Richard P.; and Wydra, William T., to Western Electric Company, Incorporated. Additive method of forming circuit crossovers. 4,200,975, Cl. 29-827.000.

DeBold, Terry: *See—*
Henthorne, Michael; and DeBold, Terry, 4,201,575, Cl. 75-122.000.

Deborah Services Limited: *See—*
Kitchen, Roger M.; and Braithwaite, Dennis, 4,200,955, Cl. 16-106.000.

Deepsea Ventures, Inc.: *See—*
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Deere & Company: *See—*
Bigbee, Marvin L.; Lindstrom, Harold R.; and Ryan, Edward C., 4,201,348, Cl. 241-101.00B.
Harvey, James R., 4,201,098, Cl. 74-761.000.

Deigner, Paul: *See—*
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.
Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, 4,201,149, Cl. 118-52.000.

Deinhammer, Wolfgang; and Spes, Hellmuth, to Wacker-Chemie GmbH. Process for the anilidization of carboxylic acid esters. 4,201,715, Cl. 260-345.70R.

Delaplace, Philippe; and Bernard, Pierre, to Lindauer Dornier Gesellschaft mbH. Process and apparatus for single-filling manufacture of double-nap fabrics. 4,201,248, Cl. 139-21.000.

De Laurentis, Angelo A., to Westinghouse Electric Corp. Magnetic core structure. 4,201,966, Cl. 336-217.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, to Wisconsin Alumni Research

Foundation. 24,24-Difluoro-1α,25-dihydroxycholecalciferol. 4,201,881, Cl. 568-819.000.
DeLuca, Paul V., to Porta Systems Corp. Electrode for telephone protector modules. 4,202,026, Cl. 361-119.000.
De Martelaere, David L.; and Bogard, William E., to Kent-Moore Corporation. Brake bleeder adapter. 4,201,056, Cl. 60-584.000.
Den Besten, Leroy E.; and O'Connell, James R. Mining machine bit and mounting thereof. 4,201,421, Cl. 299-86.000.
De Negris, Michael A.; and Lees, Philip, to United Technologies Corporation. Burner nozzle assembly for gas turbine engine. 4,201,046, Cl. 60-39.370.
Denenberg, Jeffrey N.: *See—*
Lawrence, Alan J.; Cotton, John M.; Hamer-Hodges, Kenneth J.; and Denenberg, Jeffrey N., 4,201,889, Cl. 320-68.000.
Lawrence, Alan J.; Denenberg, Jeffrey N.; Rubinstein, Murray; and Upp, Daniel C., 4,201,890, Cl. 370-68.000.
Lawrence, Alan J.; Cotton, John M.; and Denenberg, Jeffrey N., 4,201,891, Cl. 370-58.000.
Dennehey, T. Michael; and Wolf, Ludwig, Jr., to Baxter Travenol Laboratories, Inc. Spike connector for solution bag. 4,201,406, Cl. 285-3.000.
DePaolo, George R., to American Cyanamid Company. Method for sizing and coloring textile materials. 4,201,803, Cl. 427-381.000.
Depas, Laddie A., Sr., to Miller, Maurice L.; and Thomas, Harold W., part interest to each. Fluid operated rotary valve. 4,201,422, Cl. 303-10.000.
Depin, Jean-Claude: *See—*
Briet, Philippe; Berthelon, Jean-Jacques; and Depin, Jean-Claude, 4,201,783, Cl. 424-256.000.
Dering, Charles R., to Glueck, Richard M. Shaft angle digitizer. 4,201,911, Cl. 250-231.0SE.
Derschmidt, Hans; and Sahlstorfer, Hermann, to Messerschmitt-Bolkow-Blohm GmbH. Rotor without flapping hinges and without lead-lag hinges. 4,201,515, Cl. 416-134.00A.
DeSoto, Inc.: *See—*
Amariti, Luigi, 4,201,685, Cl. 430-114.000.
Dettmer, Edward V., to Dow Chemical Company, The. Method and apparatus for reclaiming polymer from scrap plastic film rolls. 4,200,967, Cl. 29-426.200.
Deutsch Relays, Inc.: *See—*
Lockyer, John, 4,201,437, Cl. 339-121.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Smolka, Heinz G.; and Schumann, Klaus, 4,201,689, Cl. 252-184.000.
Triebel, Wolfgang; Hari, Siegfried; Koert, Hubert; and Evers, Fritz, 4,201,828, Cl. 428-332.000.
Dewitte, Jean; and Aymard, Pierre, to Truth Incorporated. Manufacture of spherical balls. 4,201,560, Cl. 65-21.000.
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Neumann, Daniel L., 4,201,308, Cl. 220-81.00R.
Dialytic Electrolysis Laboratorium (Proprietary) Limited: *See—*
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Diehl, Franz: *See—*
Wirth, Alfred; Reimer, Hans; Mackert, Klaus; Diehl, Franz; and Splett, Klaus, 4,201,246, Cl. 138-30.000.
Dieterich, Dieter, to Bayer Aktiengesellschaft. Polyurethanes based on modified polyisocyanates containing sulphonic acid ester groups and process for the production thereof. 4,201,852, Cl. 528-67.000.
Digital Products Corporation: *See—*
Bower, David S.; and Smith, Fred J., 4,201,896, Cl. 179-18.00B.
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Dilley, Douglas M., to United States of America, Navy. Wideband VHF antenna. 4,201,988, Cl. 343-715.000.
Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., to General Electric Company. Rotary feed for tomographic scanning apparatus. 4,201,430, Cl. 339-5.00M.
Dismer, Raymond H. Solar energy collector having a fiber-optic cable. 4,201,197, Cl. 126-451.000.
Ditter, Walter: *See—*
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Dixon, Robert H.: *See—*
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Dockhorn, Wolfgang; and Achterberg, Arnoldus. Process and equipment for determining the density of a loaded drilling fluid from a deep well, in particular an oil well. 4,201,082, Cl. 73-153.000.
Dr. Eugen Durrwachter Doduco: *See—*
Harmsen, Ulf O., 4,201,327, Cl. 228-176.000.
Dodd, Alec G., to Rolls-Royce Limited. Fuel systems for gas turbine engines. 4,201,044, Cl. 60-39.09R.
Dogliotti, Renato; and Pirani, Giancarlo, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Data-transmission system and method using fiber-optical transmission. 4,201,909, Cl. 455-608.000.
Doi, Koichi; Kato, Hisao; and Kurauchi, Takeo, to Nisshin Steel Co., Ltd.; and Nippon Paint Co., Ltd. Plating-inhibitor for partially plating steel plate with molten metal. 4,201,592, Cl. 106-2.000.
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Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.
Domenicali, Peter L.; and Hunter, George C., to Zygo Corporation. Optical interferometer system with CCTV camera for measuring a wide range of aperture sizes. 4,201,473, Cl. 356-360.000.
Donnelli, Joseph W.; and Barnes, Richard D., to Southern Imperial, Inc. Machine for threading fasteners into workpieces. 4,201,255, Cl. 144-32.00R.
Dornbush, James N.: *See—*
Rollag, Dwayne A.; Dornbush, James N.; and Renner, Robert C., 4,201,663, Cl. 210-16.000.
Dorth, John P.; Burns, Robert V.; and Tarr, Lloyd A., to GTE Automatic Electric Laboratories Incorporated. Ringing voltage transfer circuit. 4,201,897, Cl. 179-84.00R.
Dougherty, William E.; and Greer, Stuart E., to International Business Machines Corporation. Multi-layer dielectric planar structure having an internal conductor pattern characterized with opposite terminations disposed at a common edge surface of the layers. 4,202,007, Cl. 357-80.000.
Douglas, Orva H.; and Mendoza, Quinciano G., to Boeing Company, The. Automatic start/manual start interlock system for a gas turbine engine. 4,201,922, Cl. 290-38.00R.
Dover Corporation: *See—*
Atkey, Richard E., 4,201,053, Cl. 60-459.000.
Dow Chemical Company, The: *See—*
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Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., 4,201,729, Cl. 260-665.00R.
Downer, Edward W. Data conversion system. 4,201,942, Cl. 375-17.000.
Dragerwerk Aktiengesellschaft: *See—*
Rinne, Gerhart; and Sachtler, Jurgen, 4,201,204, Cl. 128-203.270.
Draper, Richard W., to Schering Corporation. 6-Acyloxy-1,4,6-pregnatrienes, their use as anti-inflammatory agents, methods for their manufacture, and 6-oxo-1,4-pregnadiene intermediates. 4,201,778, Cl. 424-241.000.
Dresser Industries, Inc.: *See—*
Barker, Larry D.; and Bannerman, James K., 4,201,679, Cl. 252-8.50A.
Drum Engineering Company Limited, The: *See—*
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D'Silva, Thomas L., to GTE Sylvania Incorporated. Copper brazing alloy foils containing germanium. 4,201,601, Cl. 148-32.000.
Dubois, Robert A.; and Smith, George F., to Greif Bros. Corporation. Variable capacity all-plastic drum. 4,201,306, Cl. 220-5.00R.
Ducrocq, Paul, to Thomson-CSF. Continuous wave radar equipment. 4,201,986, Cl. 343-14.000.
Duncan, Thomas P., Jr., to Duncan, Thomas P., Jr.; and Belvin, Frank. Door mat. 4,201,817, Cl. 428-141.000.
Dunn Instruments, Inc.: *See—*
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duPont, Anthony A. Engine economizer control unit. 4,201,164, Cl. 123-117.00R.
Du Pont de Nemours, E. I., and Company: *See—*
Lee, Kyu T., 4,201,567, Cl. 71-94.000.
Schmidt, Gunter, 4,201,919, Cl. 250-468.000.
Dupre, Dallas D., III, to PPG Industries, Inc. Electrolytic cell membrane sealing means. 4,201,652, Cl. 204-258.000.
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E. B. Metal Rubber Industries, Inc.: *See—*
Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; and Carswell, William, 4,201,283, Cl. 194-1.00A.
E. Gowrie Limited: *See—*
Gowrie, Eric, 4,201,154, Cl. 119-15.000.
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Murphy, Wesley T., 4,201,026, Cl. 52-731.000.
Eagens, Jeffrey D., to Brunswick Industrial Supply Company. Reconditioned sand muller. 4,201,350, Cl. 241-298.000.
Early, Judson H.: *See—*
Off, Joseph W. A.; and Early, Judson H., 4,200,937, Cl. 2-227.000.
Eastman Kodak Company: *See—*
Abbott, Thomas I., 4,201,578, Cl. 430-222.000.
Adin, Anthony; and Fleming, James C., 4,201,588, Cl. 430-167.000.
Campbell, Gerald A.; Cohen, Hyman; Hamilton, Lewis R.; and Villard, George, 4,201,840, Cl. 430-17.000.
Coney, Charles H., 4,201,701, Cl. 260-22.0CQ.
Groet, Nicholas H.; and Lindsay, Jacque K., 4,201,841, Cl. 430-567.000.
Jackson, Winston J., Jr.; and Morris, John C., 4,201,856, Cl. 528-190.000.
Levinson, Steven R.; and Adin, Anthony, 4,201,590, Cl. 430-617.000.
Reithel, Raymond F., 4,201,583, Cl. 430-97.000.
Reithel, Raymond F., 4,201,591, Cl. 430-619.000.
Thomas, Harold T.; Howe, Dennis G.; and Lee, James K., 4,201,581, Cl. 430-396.000.
White, Richard L., 4,201,582, Cl. 430-351.000.
Eaton, Homer L., to Eaton-Leonard Corporation. Reaction bender for pipe. 4,201,073, Cl. 72-155.000.
Eaton-Leonard Corporation: *See—*
Eaton, Homer L., 4,201,073, Cl. 72-155.000.

Ebneth, Harold, to Bayer Aktiengesellschaft. Metallized textile material. 4,201,825, Cl. 428-263.000.
Eccleston, Barry C.: *See—*
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Edgar Pickering (Blackburn) Ltd.: *See—*
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Edwards, Charles M.; and Fort, J. Robert, to United Geophysical Corporation. Seismic prospecting system. 4,201,972, Cl. 367-40.000.
Edwards, Charles M., to United Geophysical Corporation. Seismic prospecting system. 4,202,048, Cl. 367-40.000.
Edwards, Harry, to Imperial Chemical Industries Limited. Apparatus for coating a web. 4,201,150, Cl. 118-323.000.
Edwards, John R.: *See—*
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Egan Machinery Company: *See—*
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Ehrly, Albrecht; and Schmitt, Hans J. Method and apparatus for measurement and registration of the aggregation rate of particles suspended in a liquid. 4,201,470, Cl. 356-39.000.
Eisenberg, Robert C.: *See—*
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El Mar Plastics, Inc.: *See—*
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Maciag, Edmund D.; and Frymire, Garold D., 4,201,123, Cl. 98-2.140.
Elkin, B. Jack, to McCampbell, James D. Crematory ash grinder. 4,201,347, Cl. 241-92.000.
Ellis, Clarence E. Wood resin cooking apparatus. 4,201,125, Cl. 99-446.000.
Ellis, Leslie E. Book and hanging device. 4,200,945, Cl. 11-1.0ET.
Ellis, Stephen R.; Bott, Theodore R.; Kay, Howard E.; and Hughes, Noel. Fluid distribution and contacting elements. 4,201,736, Cl. 261-98.000.
Ellis, Theron L.: *See—*
Chellis, Leroy N.; and Ellis, Theron L., 4,201,616, Cl. 156-307.100.
Ellner, Sidney. Ultraviolet radiation sensor for use in liquid purification system. 4,201,916, Cl. 250-372.000.
Elmore, I. James; and West, Robert F., to Stanley Works, The. Nail holder. 4,201,258, Cl. 145-46.000.
Elmore, James: *See—*
West, Robert F.; and Elmore, James, 4,200,983, Cl. 33-138.000.
Elton, Raymond C.; and Dixon, Robert H., to United States of America, Navy. Method of producing population inversion and lasing at short wavelengths by charge transfer. 4,201,955, Cl. 331-94.50G.
Emblem, Harold G.: *See—*
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Engelhard Minerals & Chemicals Corporation: *See—*
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Engelhard, Philippe: *See—*
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Matson, Wayne R., 4,201,646, Cl. 204-195.00H.
Epenoy, Gabriel I.; Kuhne, Roland; Laurent, Bernard; and Thirion, Philippe E., to International Business Machines Corporation. Specialized microprocessor for computing the sum of products of two complex operands. 4,202,039, Cl. 364-757.000.
Eppenbach, Lawrence C. Measuring dispenser. 4,201,320, Cl. 222-456.000.
Epse Broll, Madeleine C.: *See—*
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Erdtmann, Gerhard; Sastri, Chaturvedula; Kuppers, Gottfried; and Petri, Hermann, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Process for producing ^{52}manganese. 4,201,625, Cl. 176-11.000.
Ericson, Eric A., to General Electric Company. Circuit breaker drawout with engaged position latch. 4,202,027, Cl. 361-338.000.
Erlichman, Irving, to Polaroid Corporation. Photographic film assemblage having interconnected film units. 4,201,457, Cl. 354-86.000.
Ernest Holmes Division Dover Corporation: *See—*
Carr, Harold F., Jr.; and Humphries, David F., 4,201,399, Cl. 280-402.000.
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Clutch release assembly and bearing therefor. 4,201,282, Cl. 192-98.000.
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Rolling bearing having two-sided race rails. 4,201,424, Cl. 308-6.00C.
Erwin Kampf GmbH & Co. Machinenfabrik, Firma: *See—*
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Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik: *See—*
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Esaki, Koreaki, to West Electric Co., Ltd. External sensor for electronic flash. 4,201,934, Cl. 315-151.000.
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Ethicon, Inc.: *See—*
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Zorzi, Paul A.; Jones, Jesse D.; and Kucsma, Michael E., 4,201,703, Cl. 260-37.0PC.
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Evans, Kenneth R. Nut cracking apparatus. 4,201,126, Cl. 99-574.000.
Evans, Larry. Quill drive with variable feed. 4,201,271, Cl. 173-146.000.
Evans, Marvin; and Miller, David H., to College Research Corporation. Method and apparatus for heat treating materials to remove contaminants. 4,201,370, Cl. 266-44.000.
Evans, Michael L.; Menlove, Howard O.; and Baker, Michael P., to United States of America, Energy. Subthreshold neutron interrogator for detection of radioactive materials. 4,201,912, Cl. 250-253.000.
Evers, Fritz: *See—*
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Brewster, Philip W., 4,201,683, Cl. 252-32.70E.
Cummings, Richard D., 4,201,188, Cl. 126-429.000.
Johnson, Burnett H., 4,201,820, Cl. 428-195.000.
Johnson, Jack W.; and Whittingham, M. Stanley, 4,201,839, Cl. 429-194.000.
Lipinski, Henry F.; and Wantling, Steven J., 4,201,681, Cl. 252-33.200.
Savage, David W.; Chang, Chin H.; and Longo, John M., 4,201,665, Cl. 210-32.000.
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Fargo Manufacturing Company, Inc.: *See—*
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Farkas, Richard W., to Samuel Moore and Company. Method of making self-temperature regulating electrical heating cable. 4,200,973, Cl. 29-611.000.
Farrell, Robert G.: *See—*
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Fasco Industries, Inc.: *See—*
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Feder, Hubert C. Hybrid energy convertor. 4,201,059, Cl. 60-639.000.

Feder, Joseph; Ku, Katharine; and Ku, Mau-Jung, to Monsanto Company. Cell culture reactor. 4,201,845, Cl. 435-285.000.
Federal-Mogul Corporation: *See*—
Arnold, Robert A.; and Warren, Raymond, 4,201,504, Cl. 414-27.000.
Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst, to Hoechst Aktiengesellschaft. Process for the preparation of azo dyestuffs on fiber materials consisting of, or containing, cellulose fibers. 4,201,547, Cl. 8-543.000.
Fehric, Mustafa. Multiple purpose woodworking structure. 4,201,254, Cl. 144-1.00G.
Feit, Eugene D., to Bell Telephone Laboratories, Incorporated. Lithographic fabrication with treatment of "living polymer". 4,201,580, Cl. 430-319.000.
Felber, Willibald; and Woschnagg, Elmar, to Elin-Union Aktiengesellschaft. Temperature measuring device for transformers and reactors. 4,201,089, Cl. 73-350.000.
Feldman, Henry L.; Berman, Philip G.; and Washburn, William L. Therapeutic heat application. 4,201,218, Cl. 128-402.000.
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Fenne, Ivor, to Lucas Industries Limited. Fuel injection systems. 4,201,160, Cl. 123-32.00G.
Ferag AG: *See*—
Honegger, Werner, 4,201,377, Cl. 271-225.000.
Meier, Jacques, 4,201,286, Cl. 198-461.000.
Ferguson, John R. Automatic control selector for a compressor system. 4,201,517, Cl. 417-12.000.
Ferran, Robert J.: *See*—
Riegert, Richard P., 4,201,645, Cl. 204-192.00R.
Ferranti Limited: *See*—
Chalmers, Walter M., 4,201,432, Cl. 339-14.00R.
Jones, Harry; and Slater, David L., 4,201,898, Cl. 200-61.45R.
Fiat-Allis Construction Machinery, Inc.: *See*—
Joyce, Hardin, Jr., 4,201,273, Cl. 180-12.000.
Fichtel & Sachs AG: *See*—
Wirth, Alfred; Reimer, Hans; Mackert, Klaus; Diehl, Franz; and Splett, Klaus, 4,201,246, Cl. 138-30.000.
Figge, Irving E.; and Dean, Edward H., to United States of America, Army. Bonding plastic layers. 4,201,612, Cl. 156-224.000.
Filan, John J.; Holl, Walter W.; and Wellman, George R., to Smith-Kline Corporation. Bis[triethylphosphine)aurio]sulfonium sugars. 4,201,775, Cl. 424-180.000.
Fima, Raoul G., to Jumpak Products Inc. Brake apparatus with air actuated remote wear indicator. 4,201,974, Cl. 340-52.00A.
Fine, Ronald J. Dental articulator and tray system. 4,200,981, Cl. 433-60.000.
Fink, Ray D. Detachable tool combining bracket and method. 4,200,984, Cl. 33-138.000.
Finney, Roy P.; and Lynch, Henry W., to Medical Engineering Corp. Penile implant. 4,201,202, Cl. 128-79.000.
Firth Carpets Limited: *See*—
Jackson, Stanley P., 4,201,143, Cl. 112-79.00R.
Fischer, Charles F.; and Marchesani, Cesare N., to Colgate-Palmolive Company. Mechanical means for reducing cracking in soap bars. 4,201,528, Cl. 425-209.000.
Fischer, Paul W.: *See*—
Pye, David S.; and Fischer, Paul W., 4,201,678, Cl. 252-8.50A.
Fishback, Alton J.: *See*—
Calvert, Rodney K.; and Fishback, Alton J., 4,201,118, Cl. 93-39.00R.
Fishbeck, Kenneth H.; and Harpavat, Ganesh L., to Xerox Corporation. Coincidence gate ink jet with increased operating pressure window. 4,201,995, Cl. 346-140.00R.
Fisher, Michael H.: *See*—
Mrozik, Helmut H.; Fisher, Michael H.; and Kulsa, Peter, 4,201,861, Cl. 536-17.00A.
Fisher, Michael S.: *See*—
Fisher, Roy G.; and Fisher, Michael S., 4,201,048, Cl. 60-322.000.
Fisher, Roy G.; and Fisher, Michael S. Exhaust system connector. 4,201,048, Cl. 60-322.000.
Fitch, Steven J.; and Tanner, Charles A., to SCM Corporation. Process for quenching of fine particulates. 4,201,570, Cl. 75-1.00T.
Fives-Cail Babcock: *See*—
Pillon, Rene, 4,201,371, Cl. 266-50.000.
Fleenor, Clifton T.: *See*—
Halpern, Yuval; and Fleenor, Clifton T., 4,201,705, Cl. 260-45.8NT.
Fleming, James C.: *See*—
Adin, Anthony; and Fleming, James C., 4,201,588, Cl. 430-167.000.
Fletcher-Terry Company, The: *See*—
Insolio, Thomas A., 4,201,104, Cl. 83-886.000.
FMC Corporation: *See*—
Chamberlain, Neal C., 4,201,285, Cl. 198-400.000.
Liao, Hsiang P., 4,201,667, Cl. 210-50.000.
Overton, Billy J., 4,200,953, Cl. 15-349.000.
Palmer, Warren G.; and Pritchard, John N., 4,201,477, Cl. 356-434.000.
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,201,780, Cl. 424-246.000.
Ford Motor Company: *See*—
Hansen, Charles A., 4,201,509, Cl. 414-694.000.
Martin, Terence A., 4,201,057, Cl. 60-593.000.
Fort, J. Robert: *See*—
Edwards, Charles M.; and Fort, J. Robert, 4,201,972, Cl. 367-40.000.
Foseco Trading AG.: *See*—
Neat, Frank, 4,201,606, Cl. 149-37.000.
Foster-Miller Associates, Inc.: *See*—
Ribich, William A.; Hug, Hans A.; and Bellows, Alfred H., 4,201,270, Cl. 173-43.000.
Fourcadier, Chantal: *See*—
Grollier, Jean-Francois; and Fourcadier, Chantal, 4,201,766, Cl. 424-70.000.
Fowler, Richard A.: *See*—
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,201,540, Cl. 431-361.000.
Frame, George L.: *See*—
Seale, Glenn C.; and Frame, George L., 4,201,386, Cl. 273-236.000.
Francik, Carl J.: *See*—
Mohr, William C.; Busker, Leroy H.; Francik, Carl J.; and Bergstrom, Jan I., 4,201,624, Cl. 162-205.000.
Frank, Dudley B.: *See*—
Garabedian, Arthur, 4,201,179, Cl. 123-198.00F.
Frantello, Alfred A., to Corinth Co. Inc. Attachment for drive shaft of rotary lawn mowers. 4,201,034, Cl. 56-295.000.
Franzke, Jurgen, to Roscherwerke GmbH. Apparatus for tumbling foodstuffs under vacuum. 4,201,483, Cl. 366-139.000.
Fredin, Ell C.; Morgan, James W.; and Waimer, Milo H. Automobile tool. 4,200,943, Cl. 7-100.000.
Freeman, Donald W.: *See*—
Kadan, Ranjit S.; Freeman, Donald W.; Spadaro, James J.; and Ziegler, George M., Jr., 4,201,709, Cl. 260-123.500.
Freitag, Fred H. Grave site cover. 4,200,964, Cl. 27-30.000.
French, Floyd R.; and Paige, Janet N., to Goeders, Calvin N. Spray disinfectant aerosol. 4,201,764, Cl. 424-45.000.
French, Lionel J. B. R., to Sulby Engineering Development Company Limited, The. Apparatus for applying an adhesive to a book. 4,201,615, Cl. 156-304.000.
Freund, Hans; and Kotzab, Werner, to SKF Kugellagerfabriken GmbH. Locking device for anti-friction bearings with split inner ring. 4,201,425, Cl. 308-236.000.
Frick, Egon, to Orenstein & Koppel Aktiengesellschaft. Rotatory crane with plural jibs. 4,201,305, Cl. 212-47.000.
Fricker, Richard; and Goswell, Robin W., to A.G. (Patents) Limited. Production of sherry wine. 4,201,792, Cl. 426-15.000.
Friedman, Evelyn: *See*—
Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; and Carswell, William, 4,201,283, Cl. 194-1.00A.
Friedman, Stanley I.; Cobeen, Charles P.; and Jacobsthal, Herbert K., to Honeywell Information Systems Inc. GCR Data write control apparatus. 4,201,980, Cl. 340-347.0DD.
Frigitronics of Conn., Inc.: *See*—
Andera, Joseph F.; and Eisenberg, Robert C., 4,201,319, Cl. 222-396.000.
Frisbee, Claude M., to J. I. Case Company. Adjustment mechanism for dozer blade. 4,201,268, Cl. 172-804.000.
Froidevaux, Jacques, to Electronic Time Company ETIC S.A. Method for measuring the rate or the frequency error of a quartz timepiece and measuring apparatus for carrying out this method. 4,201,077, Cl. 73-6.000.
Fromson, Howard A.; and Gracia, Robert F., to Fromson, Howard A. Decorated anodized aluminum article. 4,201,821, Cl. 428-203.000.
Frymire, Garold D.: *See*—
Maciag, Edmund D.; and Frymire, Garold D., 4,201,123, Cl. 98-2.140.
Fuchs, Ernst F.: *See*—
Horton, Derek; Weckerle, Wolfgang; Fuchs, Ernst F.; Cheung, Tak M.; Winter, Beat; and Sorenson, Roderick J., 4,201,773, Cl. 424-180.000.
Fuji Photo Film Co., Ltd.: *See*—
Hori, Kiyotaka; and Nagatomo, Shigeru, 4,201,586, Cl. 430-621.000.
Ogawa, Hiroshi; and Tamai, Yasuo, 4,201,809, Cl. 428-65.000.
Sakaguchi, Shinji; Kubodera, Seiiti; Arakawa, Jun; Shiba, Keisuke; and Tsuji, Nobuo, 4,201,589, Cl. 430-139.000.
Fujikawa, Hisao: *See*—
Kowaka, Masamichi; and Fujikawa, Hisao, 4,201,574, Cl. 75-122.000.
Fukino, Kunihiro, to Nippon Kogaku K.K. Stop-down device in a bellows device. 4,201,461, Cl. 354-272.000.
Fukuda, Kyohei: *See*—
Hisada, Takanori; and Fukuda, Kyohei, 4,201,933, Cl. 315-16.000.
Fukuda, Takashi: *See*—
Nagano, Hiroo; Fukuda, Takashi; Nagai, Hiroshi; and Nakamura, Yasuyuki, 4,201,650, Cl. 204-209.000.
Fukui, Kiyozumi, to Teijin Seiki Company Limited. Drive controlling mechanism. 4,201,279, Cl. 192-3.00N.
Fukuma, Nobuo; and Kato, Yoshito, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the feed of machine tools. 4,201,935, Cl. 318-15.000.
Fukumoto, Tsumoru: *See*—
Okamoto, Rokuro; Fukumoto, Tsumoru; Takamatsu, Akira; and Takeuchi, Tomio, 4,201,843, Cl. 435-76.000.
Fulbright, Gene R. N.: *See*—
Matejec, John K.; Lowry, Jerry D.; and Fulbright, Gene R. N., 4,201,395, Cl. 280-11.37M.
Fullerton, Wardle; and Wolanski, Bohdan, to Merck & Co., Inc. Viral liposome particle. 4,201,767, Cl. 424-89.000.

Fulmer, Glenn E.: *See—*
Kehr, Clifton L.; Wood, Louis L.; Marans, Nelson S.; and Fulmer, Glenn E., 4,201,846, Cl. 521-137.000.

Fursov, Viktor V.: *See—*
Kolotilo, Daniil M.; Fursov, Viktor V.; Cherevaty, Anatoly A.; Mazovsky, Nikolai D.; Goncharov, Leonid M.; and Apatova, Larisa D., 4,201,882, Cl. 13-27.000.

Furusawa, Tomotaka: *See—*
Kimura, Masaharu; Otuki, Yoshiharu; Sugio, Akitoshi; and Furusawa, Tomotaka, 4,201,849, Cl. 525-401.000.

Fyfe, Colin A.; Mossbrugger, Horst G.; and Yannoni, Costantino S., to International Business Machines Corporation. Spinning apparatus for NMR spectrometers. 4,201,941, Cl. 324-321.000.

Gallagher, Bernard J.: *See—*
Danko, Oliver L.; Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; and Kish, Edward E., 4,201,366, Cl. 251-335.00B.

Gambardella, Harry N. Framework for a box kite. 4,201,357, Cl. 244-153.00R.

Garabedian, Arthur, to Frank, Dudley B. Split engine vacuum control fuel metering system. 4,201,179, Cl. 123-198.00F.

Gardner, Frederick P.: *See—*
Johnson, Bernard A.; and Gardner, Frederick P., 4,201,908, Cl. 235-92.0TC.

Gardner, Thomas H.: *See—*
Whitehead, Gareth D. J.; and Gardner, Thomas H., 4,201,128, Cl. 100-45.000.

Garritsen, Peter G.: *See—*
O'Neill, Charles E.; Ettel, Victor A.; Villazor, Alfredo; and Garritsen, Peter G., 4,201,653, Cl. 204-263.000.

Garten, Herbert; and Brozenske, Donald A., to General Electric Company. Bearing clamping assembly for a gas turbine engine. 4,201,426, Cl. 308-26.000.

Gaspar, Gyula: *See—*
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.

Gasper, Kenneth E., to Olin Corporation. Liquid polymer hydration. 4,201,867, Cl. 560-205.000.

Gates, Timothy P.: *See—*
Coxon, DeWayne A.; and Gates, Timothy P., 4,201,192, Cl. 126-422.000.

Gattiker, Ernst, to Adolph Saurer Limited. Clutch-brake unit for the main shaft of a loom. 4,201,280, Cl. 192-18.00A.

Gazzoni, Domenico, to Sorema, Srl. Drier for small sized materials. 4,200,991, Cl. 34-57.00R.

Gebr. van Capelleveen B.V.: *See—*
van Capelleveen, Pieter, 4,201,288, Cl. 198-778.000.

Gebrueder Buehler AG: *See—*
Straub, Paul; and Jost, Heinrich, 4,201,287, Cl. 198-530.000.

Geddes, John J.; and Hocker, G. Benjamin, to Honeywell Inc. Fiber optic temperature sensor using liquid component fiber. 4,201,446, Cl. 350-96.290.

Geffon, Arthur P.; and Jacoby, George V., to Sperry Rand Corporation. Magnetic recording signal equalization apparatus. 4,202,017, Cl. 360-45.000.

Gemini Systems, Inc.: *See—*
Skow, Lynn R., 4,201,187, Cl. 126-110.00E.

General Electric Company: *See—*
Arendt, Ronald H.; and Curran, Matthew J., 4,201,760, Cl. 423-600.000.
Baird, Leslie L., 4,202,028, Cl. 361-343.000.
Cohen, Stuart C.; and Rosenquist, Niles R., 4,201,704, Cl. 260-40.00R.
Corrigan, Francis R., 4,201,757, Cl. 423-290.000.
Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., 4,201,430, Cl. 339-5.00M.
Ericson, Eric A., 4,202,027, Cl. 361-338.000.
Garten, Herbert; and Brozenske, Donald A., 4,201,426, Cl. 308-26.000.
Hall, Walter L.; and O'Connell, William J. J., 4,201,832, Cl. 428-412.000.
Hallgren, John E., 4,201,721, Cl. 260-463.000.
Hesler, Joseph P.; Korzekwa, Samuel M.; and McFadyen, Robert J., 4,202,031, Cl. 363-97.000.
Lupinski, John H., 4,201,837, Cl. 428-457.000.
Marion, Roland M., 4,201,039, Cl. 368-241.000.
Mark, Victor; Mitchell, Lawrence C.; and Hedges, Charles V., 4,201,878, Cl. 568-723.000.
McFadyen, Robert J., 4,201,946, Cl. 329-2.000.
M'Sadoques, Andre J., 4,201,439, Cl. 339-259.00R.
Roumanis, Paul J., 4,201,936, Cl. 318-341.000.
Slusarczuk, George M. J.; and Brooks, Ronald E., 4,201,831, Cl. 428-403.000.
van Sorge, Bernardus J., 4,201,880, Cl. 568-804.000.
Ziegler, William D., 4,201,345, Cl. 241-46.00R.

General Motors Corporation: *See—*
Brynn, Gerald E., 4,201,401, Cl. 280-803.000.

General Nutrition Corporation: *See—*
Walsh, David E., 4,201,349, Cl. 241-247.000.

Genovese, David L.; and Madarasz, Miklos, to Sealectro Corporation. Miniature matrix assembly. 4,201,436, Cl. 339-96.000.

Geo. P. Reintjes Co., Inc.: *See—*
Weidman, Larry G., 4,201,904, Cl. 219-98.000.

Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., to Institute Po Mechanika I Biomechanika. Method of and a device for hydro-automatic sprinkling with sinking hydrants. 4,201,340, Cl. 239-66.000.

Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz J., 4,201,101, Cl. 83-22.000.

Gerber, Heinz J., to Gerber Garment Technology, Inc. Cutting method and apparatus with automatic tool sharpening. 4,201,101, Cl. 83-22.000.

Gerbet, Roger G.; Leroux, Jean-Claude; Morin, Daniel L.; and Leclercq, Marius F., to Societe Nationale des Poudres et Explosifs. Racquet frames. 4,201,381, Cl. 273-73.00F.

Gerhart, James P., deceased; and Gerhart, Merle A., executrix. Core-spacer-core mandrel loader. 4,201,505, Cl. 414-27.000.

Gerhart, Merle A., executrix: *See—*
Gerhart, James P., deceased; and Gerhart, Merle A., executrix, 4,201,505, Cl. 414-27.000.

Gerlier, Jean-Pierre; and Augier, Jacques, to Institut Pasteur. Photometer with automatic test sample selection, scanning and analysis system. 4,201,478, Cl. 356-440.000.

Gessi, Giovanni. Roller-skate bicycle for amusement, moving by the swinging movement of the driver. 4,201,396, Cl. 280-229.000.

Gessler, Albert M.: *See—*
Tornqvist, Erik G. M.; and Gessler, Albert M., 4,201,850, Cl. 526-337.000.

GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft: *See—*
Kralowetz, Bruno; and Kirchberger, Peter, 4,201,500, Cl. 407-43.000.

Gherner, Lidio. Hydraulic motor. 4,201,117, Cl. 91-499.000.

Gilbert Associates, Inc.: *See—*
Dayen, William R., 4,201,753, Cl. 423-242.000.

Gilbert, Earl F., to Westvaco Corporation. Hinged cover container with hand hole lock. 4,201,330, Cl. 229-33.000.

Gilbert, John F.; and Lyons, Nicholas L., to Gilbert, John Francis; and Gilbert, Margaret. Mesh structures. 4,201,814, Cl. 428-107.000.

Gilbert, John Francis: *See—*
Gilbert, John F.; and Lyons, Nicholas L., 4,201,814, Cl. 428-107.000.

Gilbert, Margaret: *See—*
Gilbert, John F.; and Lyons, Nicholas L., 4,201,814, Cl. 428-107.000.

Gilbert, William H.: *See—*
Chrisler, Vivian L., deceased; Gilbert, William H.; and Boyer, George L., 4,202,047, Cl. 367-1.000.

Gill, Glenn G.; and Cycowicz, Izchak, to Mohasco Corporation. Pull-out sofa bed and hardware therefor. 4,200,941, Cl. 5-13.000.

Gillery, F. Howard, to PPG Industries, Inc. Low resistance indium oxide coatings. 4,201,649, Cl. 204-192.00P.

Gillespie, Herman L.; and Baumgartner, Harlow E., to Baumgartner, Lois C. Bow or keel solid lift assembly for boats. 4,200,944, Cl. 9-1.100.

Gilligan, Lawrence H.; and Hermansdorfer, James E., to Sperry Corporation. Pulse modulated automatic light control. 4,202,014, Cl. 358-228.000.

Gilomen, Beat: *See—*
Visconti, Gerald; and Gilomen, Beat, 4,201,042, Cl. 368-170.000.

Giuffre, Luigi: *See—*
Spaziante, Placido M.; Giuffre, Luigi; and Modica, Giovanni, 4,201,647, Cl. 204-195.00F.

Givaudan Corporation: *See—*
Krasnobajew, Victor; and Boeniger, Regula, 4,201,857, Cl. 525-398.000.

Glachet, Charles, to La Calhene. Bidirectional joining device. 4,201,310, Cl. 220-256.000.

Glaser, Edmund M.; and Van der Loos, Hendrik. Computer microscope apparatus and method for superimposing an electronically-produced image from the computer memory upon the image in the microscope's field of view. 4,202,037, Cl. 364-518.000.

Glueck, Richard M.: *See—*
Dering, Charles R., 4,201,911, Cl. 250-231.0SE.

Goeders, Calvin N.: *See—*
French, Floyd R.; and Paige, Janet N., 4,201,764, Cl. 424-45.000.

Goetzewerke Friedrich Goetze AG: *See—*
Stecher, Friedhelm; Fazekas, Josef; Johren, Paul; and Morsbach, Martin, 4,201,804, Cl. 427-393.600.

Gohring, Werner: *See—*
Luiten, Cornelis H.; and Gohring, Werner, 4,201,600, Cl. 148-16.500.

Goldberg, Bruce S., to Amerace Corporation. Laminated microporous article. 4,201,838, Cl. 429-145.000.

Goldstein, Stanley A. Cooler for chilling a working fluid. 4,201,262, Cl. 165-117.000.

Goncharov, Leonid M.: *See—*
Kolotilo, Daniil M.; Fursov, Viktor V.; Cherevaty, Anatoly A.; Mazovsky, Nikolai D.; Goncharov, Leonid M.; and Apatova, Larisa D., 4,201,882, Cl. 13-27.000.

Gonet, Charles F.: *See—*
Davidson, Thomas L.; and Gonet, Charles F., 4,201,292, Cl. 206-44.00R.

Gooding, Trevor F., to Wilkinson Sword Limited. Shaving units. 4,200,976, Cl. 30-47.000.

Goodyear Tire & Rubber Company, The: *See—*
Agarwal, Maya, 4,201,859, Cl. 528-302.000.
Church, Shirley L.; and Hilts, Loren M., 4,201,628, Cl. 202-158.000.
Makinson, Charles L., 4,201,744, Cl. 264-250.000.

Mast, William C.; and Bauer, Richard G., 4,201,829, Cl. 428-332.000.
Gordos Corporation: *See*—
Marchev, George B., 4,201,900, Cl. 200-220.000.
Gorin, Everett: *See*—
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,201,655, Cl. 208-8.0LE.
Gorog, Sandor: *See*—
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szaboles; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,201,723, Cl. 260-570.0AB.
Goshima, Norio; and Matsuda, Akira, to Bridgestone Tire Company Limited. Tire pressure drop warning apparatus. 4,201,147, Cl. 116-34.00B.
Gosset, Cyrille; and Thomas, Jean-Marc, to Compagnie Internationale pour l'Informatique. Recording/control arrangement for a dot recording machine. 4,201,488, Cl. 400-121.000.
Goswell, Robin W.: *See*—
Fricker, Richard; and Goswell, Robin W., 4,201,772, Cl. 426-15.000.
Gotoda, Masao; Okada, Toshio; Murata, Kazuo; and Takahashi, Kusuhiko, to Japan Atomic Energy Research Institute; Toshiba Ray-O-Vak K.K.; and Yuasa Battery Co., Ltd. Radiation grafting process for preparing a membrane for battery separator. 4,201,641, Cl. 204-159.170.
Gowrie, Eric, to E. Gowrie Limited. Chambers for housing animals in toxycology laboratories. 4,201,154, Cl. 119-15.000.
Gracia, Robert F.: *See*—
Fromson, Howard A.; and Gracia, Robert F., 4,201,821, Cl. 428-203.000.
Graentzel, Alfred. Apparatus for irradiation of fluids. 4,201,917, Cl. 250-431.000.
Granath, Kirsti A.: *See*—
Ingelman, Bjorn G.; Richter, Ary W.; and Granath, Kirsti A., 4,201,772, Cl. 424-180.000.
Grant Oil Tool Company: *See*—
Watts, James T., 4,201,392, Cl. 277-165.000.
Gras, Ranulf W., to Teradyne, Inc. Substrate carrier. 4,201,374, Cl. 269-37.000.
Green Cross Corporation, The: *See*—
Naito, Ryoichi; Shiino, Satoru; and Inahara, Hirohisa, 4,201,776, Cl. 424-195.000.
Green, Keith: *See*—
Trager, Seymour F.; and Green, Keith, 4,201,706, Cl. 424-78.000.
Greene, Richard K.: *See*—
Hannon, Martin J.; and Greene, Richard K., 4,201,834, Cl. 428-407.000.
Greer, Stuart E.: *See*—
Dougherty, William E.; and Greer, Stuart E., 4,202,007, Cl. 357-80.000.
Gregorig, Stephen I. N.: *See*—
Pitt, Gillies D.; and Gregorig, Stephen I. N., 4,201,471, Cl. 356-70.000.
Greif Bros. Corporation: *See*—
Dubois, Robert A.; and Smith, George F., 4,201,306, Cl. 220-5.00R.
Gresch, Heinz: *See*—
Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, 4,201,751, Cl. 423-210.000.
Griffin, Charles K., to Carrier Corporation. Variable capacity vapor compression refrigeration system. 4,201,065, Cl. 62-510.000.
Griffin, Warren R., to United States of America, Air Force. Fluorine containing polyethers. 4,201,876, Cl. 568-677.000.
Griffith, Jeremy N. Demountable seating furniture. 4,201,417, Cl. 297-442.000.
Grissonnanche, Jean L., to Societe Francais d'Equipements pour la Navigation Aerienne. Device for the display of data representative of quantities. 4,201,981, Cl. 340-380.000.
Grochowski, Horst: *See*—
Juntgen, Harald; Knoblauch, Karl; Grochowski, Horst; and Schwarte, Jurgen, 4,201,695, Cl. 252-411.00R.
Groet, Nicholas H.; and Lindsay, Jacque K., to Eastman Kodak Company. Process for preparing photographic elements exhibiting differential micro- and macro-area recording characteristics. 4,201,841, Cl. 430-567.000.
Grollier, Jean-Francois; and Fourcadier, Chantal, to L'Oreal. Hair conditioning composition and method of using the same. 4,201,766, Cl. 424-70.000.
Gronen, Willy: *See*—
Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst, 4,201,547, Cl. 8-543.000.
Gruppo Lepetit S.p.A.: *See*—
Guzzi, Umberto; and Ciabatti, Romeo, 4,201,865, Cl. 560-121.000.
GTE Automatic Electric Laboratories Incorporated: *See*—
Dorth, John P.; Burns, Robert V.; and Tarr, Lloyd A., 4,201,897, Cl. 179-84.00R.
McLaughlin, Donald W., 4,201,893, Cl. 370-58.000.
McLaughlin, Donald W., 4,201,894, Cl. 370-58.000.
Vrba, James J., 4,201,885, Cl. 375-106.000.
GTE Sylvania Incorporated: *See*—
D'Silva, Thomas L., 4,201,601, Cl. 148-32.000.
Liang, Anthony, 4,201,719, Cl. 260-429.00R.
Shea, Richard J., 4,201,438, Cl. 339-144.00R.
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,201,540, Cl. 431-361.000.
Gubaidulin, Vyacheslav F.: *See*—
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P., 4,201,075, Cl. 72-204.000.
Gulf Oil Canada Limited: *See*—
Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.
Gulf Oil Corporation: *See*—
Hedrich, Loren W., 4,201,569, Cl. 71-98.000.
Gunn, Damon M. Article sorting apparatus and method. 4,201,339, Cl. 235-487.000.
Gupta, Kedar P.: *See*—
Burd, John W.; Stone, Bobbie D.; Tucker, William F.; and Gupta, Kedar P., 4,201,746, Cl. 422-250.000.
Gustafson, William E.: *See*—
Briggs, Eugene C.; and Gustafson, William E., 4,201,544, Cl. 432-222.000.
Gustafsson, Berth U., to Projectus Industriprodukter Aktiebolag. Method for controlling the flow through a distillation apparatus and a device for carrying out the method. 4,201,631, Cl. 203-1.000.
Guyot, Volker; Maus, Otfrid; and Mueller, Martin, to Carl Schenck AG. Method and apparatus for determining the angle of imbalance of a balancing machine. 4,201,091, Cl. 73-462.000.
Guzzi, Umberto; and Ciabatti, Romeo, to Gruppo Lepetit S.p.A. Novel prostaglandin analogues. 4,201,865, Cl. 560-121.000.
Haag, Ronald G.: *See*—
Burridge, Len, Jr., 4,201,009, Cl. 46-1.00F.
Haase, Thomas. Method and apparatus for in vivo measurement of blood gas partial pressures, blood pressure and blood pulse. 4,201,222, Cl. 128-634.000.
Hagen, Magnus F.; and Stanley, Donald, to Standard Precision, Inc. Synchronized traveling carriage assembly. 4,201,423, Cl. 308-6.00R.
Haggar Company: *See*—
Off, Joseph W. A.; and Early, Judson H., 4,200,937, Cl. 2-227.000.
Hajime Industries, Ltd.: *See*—
Shimizu, Toshiyuki, 4,201,977, Cl. 340-146.30H.
Haley, George D. Method for refining ferrophosphorus for use in the production of phosphorus-containing steel. 4,201,576, Cl. 75-132.000.
Hall, Arthur L. Pressurized fluid control circuit. 4,201,051, Cl. 60-407.000.
Hall, Collin C.: *See*—
Paptzun, George J.; Hall, Collin C.; and Bullwinkle, Benjamin B., 4,201,365, Cl. 251-328.000.
Hall, Harold H., Jr.: *See*—
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., 4,201,540, Cl. 431-361.000.
Hall, John B.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.
Hall, Walter L.; and O'Connell, William J. J., to General Electric Company. Non melt-drip flame retardant polycarbonate composition. 4,201,832, Cl. 428-412.000.
Hallgren, John E., to General Electric Company. Catalytic aromatic carbonate process. 4,201,721, Cl. 260-463.000.
Halpern, Yuval; and Fleenor, Clifton T., to Borg-Warner Corporation. Intumescent flame retardant polyolefin compositions. 4,201,705, Cl. 260-45.8NT.
Hamada, Hiroshi: *See*—
Inami, Yasuhiko; Hishida, Tadanori; Yano, Kozo; Hamada, Hiroshi; and Nakauchi, Hiroshi, 4,201,985, Cl. 340-785.000.
Hamer-Hodges, Kenneth J.: *See*—
Lawrence, Alan J.; Cotton, John M.; Hamer-Hodges, Kenneth J.; and Denenberg, Jeffrey N., 4,201,889, Cl. 320-68.000.
Hamilton, Kenneth W.: *See*—
Magerl, Richard A.; Dykas, George E.; and Hamilton, Kenneth W., 4,201,983, Cl. 340-709.000.
Hamilton, Lewis R.: *See*—
Campbell, Gerald A.; Cohen, Hyman; Hamilton, Lewis R.; and Villard, George, 4,201,840, Cl. 430-17.000.
Hams, Kenneth A., to Bell & Howell Company. Skew detector. 4,201,378, Cl. 271-261.000.
Hanai, Kiyoshi; and Sugiura, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Sugiura Seisakusho Co. Ltd. Hub nut with washer. 4,201,110, Cl. 85-32.00R.
Haneishi, Tatsuo: *See*—
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, 4,201,769, Cl. 424-117.000.
Hannon, Martin J.; and Greene, Richard K., to Celanese Corporation. Powder composition and method of preparation. 4,201,834, Cl. 428-407.000.
Hansen, Charles A., to Ford Motor Company. Backhoe swing cylinder hydraulic circuit. 4,201,509, Cl. 414-694.000.
Happel, Walter: *See*—
Sudler, Roland; and Happel, Walter, 4,201,929, Cl. 310-49.00R.
Harato, Takuo: *See*—
Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,201,749, Cl. 423-127.000.
Hareng, Michel; and Le Berre, Serge, to Thomson-CSF. Thermoelectric display cell for recording images line by line. 4,202,010, Cl. 358-56.000.
Hari, Siegfried: *See*—
Triebel, Wolfgang; Hari, Siegfried; Koert, Hubert; and Evers, Fritz, 4,201,828, Cl. 428-332.000.

Harigaya, Isao; Taguchi, Tetsuya; Ito, Fumio; and Yazaki, Mutsunobu, to Canon Kabushiki Kaisha. Photographic camera device. 4,201,463, Cl. 354-86.000.

Harkins, James L. Method of cooking meat. 4,201,796, Cl. 426-238.000.

Harmsen, Ulf O., to Dr. Eugen Durrwachter Doduco. Method of producing a laminar contact material including a layer of silver and a metal oxide dispersed therein. 4,201,327, Cl. 228-176.000.

Harnisch, Horst, to Bayer Aktiengesellschaft. Naphthostyril dyestuffs. 4,201,713, Cl. 546-41.000.

Harnish, Wayne N.: *See*—
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,201,780, Cl. 424-246.000.

Harpavat, Ganesh L.: *See*—
Fishbeck, Kenneth H.; and Harpavat, Ganesh L., 4,201,995, Cl. 346-140.00R.

Harris Corporation: *See*—
Schroeder, James E., 4,200,968, Cl. 29-571.000.

Hartmann, Job-Werner: *See*—
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.

Hartmann, Klaus; and Siersch, Wolfgang, to Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik. Gas velocity meter. 4,201,467, Cl. 356-28.000.

Hartzell Manufacturing, Inc.: *See*—
Larson, Donald A.; and Reichert, Theodore J., 4,201,298, Cl. 206-387.000.

Harvey, James R., to Deere & Company. Transmission. 4,201,098, Cl. 74-761.000.

Hasegawa, Jun, to American Home Products Corporation. O-Hemisuccinate of propranolol. 4,201,866, Cl. 560-194.000.

Hashizume, Hiroshi: *See*—
Kimura, Tsuneo; and Hashizume, Hiroshi, 4,201,872, Cl. 562-487.000.

Hassinger, Donald F.: *See*—
Jacob, Keith D., 4,201,451, Cl. 350-278.000.

Hattori, Tadashi; Nishida, Minoru; Ueno, Yoshiki; Makita, Kunio; and Kurii, Masaaki, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Ignition system for internal combustion engine. 4,201,163, Cl. 123-117.00R.

Hattori, Yoshiyuki: *See*—
Inagaki, Mitsuo; Hattori, Yoshiyuki; and Taguchi, Masahiro, 4,201,930, Cl. 310-51.000.

Hauni-Werke Korber & Co., KG: *See*—
Rudszinat, Willy, 4,201,102, Cl. 83-298.000.

Hauser, Hans: *See*—
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.

Hazama, Katashi: *See*—
Noro, Yoshihiko; Hazama, Katashi; Yamada, Jun; Yanagihara, Hitoshi; and Miura, Michiyori, 4,201,964, Cl. 333-151.000.

Hedges, Charles V.: *See*—
Mark, Victor; Mitchell, Lawrence C.; and Hedges, Charles V., 4,201,878, Cl. 568-723.000.

Hedrich, Loren W., to Gulf Oil Corporation. 2,3-Disubstituted aralkylaminoacrylonitriles and use as herbicides. 4,201,569, Cl. 71-98.000.

Heeb, Othmar: *See*—
Maier, Elmar; and Heeb, Othmar, 4,201,324, Cl. 227-9.000.

Heffern, Edward W.: *See*—
Sabol, Albert R.; Petrille, Dennis G.; and Heffern, Edward W. 4,201,682, Cl. 252-33.400.

Heffernan, Edward J., to Carrier Corporation. Automatic chilled water setpoint temperature control. 4,201,061, Cl. 62-98.000.

Hehl, Rudolf: *See*—
Artzt, Peter; Hehl, Rudolf; Egbers, Gerhard; and Schenek, Anton, 4,201,037, Cl. 57-301.000.

Heinrich, William P.: *See*—
Slepak, Bernard; Tucker, John E.; and Heinrich, William P., 4,201,080, Cl. 73-73.000.

Heitkamp, Dieter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Magnetically supported particle matrix for accumulating or affecting substances dissolved or finely dispersed in a liquid or gas. 4,201,827, Cl. 428-283.000.

Hekal, Ihab M., to Continental Group, Inc., The. Ultrafiltration or reverse osmosis treatment of emulsified oil metal working coolants. 4,201,664, Cl. 210-23.00H.

Hendry, James W., to Ex-Cell-O Corporation. Method and apparatus for injection molding foamed resin products having a smooth finish on their surface. 4,201,742, Cl. 264-45.500.

Heniff, William V., Jr. Container for storing paint and a roller-type paint applicator. 4,200,949, Cl. 15-257.060.

Henkel Corporation: *See*—
Krbechek, Leroy O., 4,201,716, Cl. 260-397.400.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Smolka, Heinz G.; and Schumann, Klaus, 4,201,689, Cl. 252-184.000.
Waltenberger, Peter; Uphues, Gunter; and Petzold, Manfred, 4,201,680, Cl. 252-8.600.

Henrick, Clive A.: *See*—
Anderson, Richard J.; and Henrick, Clive A., 4,201,874, Cl. 562-598.000.

Henry, Ronald A.; and Martin, Eugene C., to United States of America, Navy. Polymeric binders of nitrated phenols and polyisocyanates which reversibly dissociate at elevated temperatures. 4,201,853, Cl. 528-85.000.

Henthorne, Michael; and DeBold, Terry, to Carpenter Technology Corporation. Austenitic stainless corrosion-resistant alloy. 4,201,575, Cl. 75-122.000.

Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity: *See*—
Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.

Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for the thermal treatment of alkali-containing pulverized raw material to be used in the manufacture of cement. 4,201,546, Cl. 432-106.000.

Hermann Berstorff Maschinenbau GmbH: *See*—
Brand, Wilhelm, 4,201,480, Cl. 366-79.000.

Hermansdorfer, James E.: *See*—
Gilligan, Lawrence H.; and Hermansdorfer, James E., 4,202,014, Cl. 358-228.000.

Hesler, Joseph P.; Korzekwa, Samuel M.; and McFadyen, Robert J., to General Electric Company. Static inverter employing an assymetrically energized inductor. 4,202,031, Cl. 363-97.000.

Hess, Peter, to Metallwerk Max Brose GmbH. Operating mechanism for a motorcar window. 4,201,014, Cl. 49-325.000.

Heybourn, Frank: *See*—
Hinchcliffe, Dennis; Heybourn, Frank; and Luddington, Eric A., 4,201,507, Cl. 414-331.000.

Higashiguchi, Shigehiko. Transferable flocked fiber design material. 4,201,810, Cl. 428-90.000.

Hijikata, Akiko: *See*—
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,201,863, Cl. 546-166.000.

Hildenbrand, Hartmut: *See*—
Rautenberg, Peter; Hildenbrand, Hartmut; and Parmar, Daljit-Singh, 4,201,607, Cl. 156-70.000.

Hill, Harold W., Jr. Passive audio signal mixing apparatus. 4,201,895, Cl. 179-100.10R.

Hilti Aktiengesellschaft: *See*—
Jochum, Peter, 4,201,325, Cl. 227-9.000.
Maier, Elmar; and Heeb, Othmar, 4,201,324, Cl. 227-9.000.

Hilts, Loren M.: *See*—
Church, Shirley L.; and Hilts, Loren M., 4,201,628, Cl. 202-158.000.

Hilzensauer, Volkmar: *See*—
Kirsch, Kurt; Hilzensauer, Volkmar; Pflug, Gunther; Wehrmann, Felix; and Maresch, Gerald, 4,201,833, Cl. 428-404.000.

Hinchcliffe, Dennis; Heybourn, Frank; and Luddington, Eric A., to Molins Limited. Apparatus for handling rod-like articles. 4,201,507, Cl. 414-331.000.

Hincks, Robert W.: *See*—
Aziz, Paul D.; and Hincks, Robert W., 4,201,402, Cl. 282-9.00A.

Hinson, Virgil H.: *See*—
Jarman, Davis R.; and Hinson, Virgil H., 4,201,076, Cl. 72-392.000.

Hioki, Shunkichi: *See*—
Koyahata, Hirosi; and Hioki, Shunkichi, 4,201,390, Cl. 274-15.00R.

Hiraki, Shunichi: *See*—
Aoyama, Masaharu; Hiraki, Shunichi; and Yonezawa, Toshio, 4,200,969, Cl. 29-577.00R.

Hirashima, Masayoshi, to Matsushita Electric Industrial Co., Ltd. Sampling clock reproducing device. 4,202,012, Cl. 358-147.000.

Hisada, Takanori; and Fukuda, Kyohei, to Hitachi, Ltd. Electron gun structure for a pickup tube. 4,201,933, Cl. 315-16.000.

Hishida, Tadanori: *See*—
Inami, Yasuhiko; Takechi, Sadatoshi; Hishida, Tadanori; Uede, Hisashi; and Take, Hiroshi, 4,201,984, Cl. 340-763.000.
Inami, Yasuhiko; Hishida, Tadanori; Yano, Kozo; Hamada, Hiroshi; and Nakauchi, Hiroshi, 4,201,985, Cl. 340-785.000.

Hitachi, Ltd.: *See*—
Hisada, Takanori; and Fukuda, Kyohei, 4,201,933, Cl. 315-16.000.
Ito, Syoichi; and Suzuki, Mithuo, 4,201,993, Cl. 346-75.000.
Kuwabara, Takao; Okumura, Hiroshi; and Yokoyama, Toshiaki, 4,201,925, Cl. 290-52.000.
Maeda, Yoshio, 4,201,472, Cl. 356-226.000.
Nishimura, Yutaka; and Oyama, Yoshishige, 4,201,166, Cl. 123-119.0EC.
Noro, Yoshihiko; Hazama, Katashi; Yamada, Jun; Yanagihara, Hitoshi; and Miura, Michiyori, 4,201,964, Cl. 333-151.000.
Okada, Tomoyuki; and Sugiura, Noboru, 4,201,173, Cl. 123-148.00C.
Sasayama, Takao; and Suda, Seiji, 4,201,161, Cl. 123-32.0EB.
Tanaka, Tomoyuki; Shirasawa, Toshikatsu; and Okamura, Masahiro, 4,201,598, Cl. 148-1.500.
Yoshikawa, Hiroshi; Kawakami, Akihiro; and Sato, Hideaki, 4,202,029, Cl. 361-394.000.

Hocker, G. Benjamin: *See*—
Geddes, John J.; and Hocker, G. Benjamin, 4,201,446, Cl. 350-96.290.

Hodge, Malcolm H., to TRW Inc. Optical fiber coupler for interfacing with light sources and detectors. 4,201,443, Cl. 350-96.200.

Hodgkinson, Norman: *See*—
Randell, Arthur A.; and Hodgkinson, Norman, 4,201,676, Cl. 252-1.000.

Hoechst Aktiengesellschaft: *See*—
Bormann, Dieter; Knabe, Bernd; Schrinner, Elmar; and Worm, Manfred, 4,201,779, Cl. 424-246.000.
Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst, 4,201,547, Cl. 8-543.000.

Hoffmann-La Roche Inc.: *See*—
Barner, Richard; and Schmid, Max, 4,201,879, Cl. 568-766.000.
Chan, Ka-Kong; and Pawson, Beverly A., 4,201,727, Cl. 568-442.000.
Cohen, Noal; and Saucy, Gabriel, 4,201,869, Cl. 560-255.000.
Olson, Gary L.; and Saucy, Gabriel, 4,201,726, Cl. 568-413.000.
Suchy, Milos, 4,201,789, Cl. 424-305.000.
Valenta, Zdenek, 4,201,717, Cl. 260-397.450.

Hofmann, William E.; and Long, Alton W., to Owens-Illinois, Inc. Method for coating glassware. 4,201,562, Cl. 65-60.00B.

Hogan, Vaughn C.: *See*—
McCartney, Ronald L.; Arnold, Bruce K.; and Hogan, Vaughn C., 4,201,444, Cl. 350-96.210.

Holl, Herbert B.; and Roberts, Thomas G., to United States of America, Army. Variable angle of incidence reflectometer with a continuous read out. 4,201,474, Cl. 356-369.000.

Holl, Walter W.: *See*—
Filan, John J.; Holl, Walter W.; and Wellman, George R., 4,201,775, Cl. 424-180.000.

Holloman, Miles E.: *See*—
Barr, Thomas A., Jr.; Holloman, Miles E.; and Walters, Joseph M., 4,201,950, Cl. 331-94.50G.

Holman, David J.; and James, Howard, to United Kingdom Atomic Energy Authority. Analytical apparatus. 4,201,643, Cl. 204-180.00R.

Holman, Rudolph G.; and Ketchum, Frank W., to AMF Incorporated. Compound bow. 4,201,177, Cl. 124-23.00R.

Holstein und Kappert GmbH: *See*—
Borstelmann, Wolfgang, 4,201,249, Cl. 141-39.000.
Schwinghammer, Günther, 4,201,674, Cl. 210-333.00R.

Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich. Gas purification. 4,201,751, Cl. 423-210.000.

Holzschuh, Johann, to Battenfeld Maschinenfabriken. Mold closing and locking device. 4,201,533, Cl. 425-451.900.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Kawashima, Yoshinori; Watanabe, Masaki; and Kinoshita, Katsuharu, 4,201,393, Cl. 277-92.000.
Ohama, Yasumichi, 4,201,168, Cl. 123-122.0AB.

Honda Motor Co., Ltd.: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro, 4,201,644, Cl. 204-181.00C.

Honegger, Werner, to Ferag AG. Conveyor system having a lateral take-off conveyor for flat products, especially paper products. 4,201,377, Cl. 271-225.000.

Honeywell Inc.: *See*—
Bursack, William W.; and Tromborg, Erik T., 4,201,913, Cl. 250-288.000.
Geddes, John J.; and Hocker, G. Benjamin, 4,201,446, Cl. 350-96.290.
Mott, Richard C., 4,201,245, Cl. 137-624.110.
Mott, Richard C., 4,201,336, Cl. 235-200.0WB.

Honeywell Information Systems Inc.: *See*—
Friedman, Stanley I.; Cobeen, Charles P.; and Jacobsthal, Herbert K., 4,201,980, Cl. 340-347.0DD.

Hoogenbosch, Thomas C., to J. & A. Atlas Nominees Pty. Ltd. Towing device. 4,201,400, Cl. 280-511.000.

Hori, Kiyoshi, to Nippon Paint Co., Ltd. Method of forming a decorative relief pattern. 4,201,801, Cl. 427-274.000.

Hori, Kiyotaka; and Nagatomo, Shigeru, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material. 4,201,586, Cl. 430-621.000.

Horn, Dieter: *See*—
Kurtz, Walter; Horn, Dieter; and Ditter, Walter, 4,201,710, Cl. 260-156.000.

Horton, Derek; Weckerle, Wolfgang; Fuchs, Ernst F.; Cheung, Tak M.; Winter, Beat; and Sorenson, Roderick J., to United States of America, Health, Education and Welfare. 7-O-(2,6-Dideoxy-α-L-lyxo-hexopyranosyl)-daunomycinone, desmethoxy daunomycinone, adriamycinone, and carminomycinone. 4,201,773, Cl. 424-180.000.

Horton, John R., III. Construction for the interior of a van or truck. 4,201,414, Cl. 296-169.000.

Horton, Robert L., to Phillips Petroleum Company. Process for converting sulfur in hydrocarbon to water soluble form. 4,201,662, Cl. 208-228.000.

Hoshito, Kazuo; Sato, Hideaki; Kitamura, Takashi; and Masegi, Koichi, to Canon Kabushiki Kaisha. Information formation apparatus. 4,201,994, Cl. 346-108.000.

Hosoya, Nobukazu, to Sanyo Electric Co., Ltd. Input transformer arrangement for use in a television receiver. 4,201,962, Cl. 333-25.000.

Houdaille Industries, Inc.: *See*—
Clark, Stephen C.; and Carbone, Victor T., 4,201,905, Cl. 219-121.00L.

Houston, Theodore W.: *See*—
Darley, Henry M.; Houston, Theodore W.; and Kruger, James B., 4,201,997, Cl. 357-15.000.
Darley, Henry M.; Houston, Theodore W.; and Yuan, Han T., 4,202,003, Cl. 357-15.000.

Houtkamp, Johannes J., to N.V. Optische Industrie "De Oude Delft". Process for applying a light-absorbing, electron permeable layer within an image intensifier tube. 4,201,797, Cl. 427-66.000.

Howard, James K.; Turene, Frank E.; and White, James F., to International Business Machines Corporation. Low barrier Schottky diodes. 4,201,999, Cl. 357-15.000.

Howe, Dennis G.: *See*—
Thomas, Harold T.; Howe, Dennis G.; and Lee, James K., 4,201,581, Cl. 430-396.000.

Howell, Joseph R., Jr. Bong with full-bore removable plug standard. 4,201,230, Cl. 131-173.000.

Hoyle, Roy E.: *See*—
Kolk, Michael R.; Beck, Ralph E.; and Hoyle, Roy E., 4,201,516, Cl. 416-213.00R.

Hoyt, Charles W.: *See*—
Buske, Walter E.; and Hoyt, Charles W., 4,201,499, Cl. 406-75.000.

Hrabik, Heinrich, to Bonum-Werk Inhaber Friedrich Hetzmannseder. Preservative for film. 4,201,296, Cl. 206-205.000.

Hruza, Denis E., Sr.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

Hsu, Yun T. Self-closing door hinge. 4,200,957, Cl. 16-154.000.

Huang, Ho-Chung: *See*—
Reichert, Walter F.; and Huang, Ho-Chung, 4,202,001, Cl. 357-22.000.

Huang, Jen-Chi, to Polychrome Corporation. Aluminum substrates grained with a saturated solution of aluminum salts of mineral acids. 4,201,836, Cl. 428-457.000.

Hubbard, James H.: *See*—
Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., 4,201,464, Cl. 355-14.00R.

Hubner, Otto. Appliance for the care and cleaning of teeth and gums. 4,201,200, Cl. 128-66.000.

Hudson Oxygen Therapy Sales Company: *See*—
Bartholomew, Victor L., 4,201,205, Cl. 128-205.250.

Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, to BASF Aktiengesellschaft. Process for the manufacture of magnetic recording media. 4,201,486, Cl. 366-196.000.

Huetter, Ulrich. Wind turbine. 4,201,514, Cl. 416-37.000.

Hug, Hans A.: *See*—
Ribich, William A.; Hug, Hans A.; and Bellows, Alfred H., 4,201,270, Cl. 173-43.000.

Huggler, Peter E., to McGraw-Edison Company. Temperature sensitive timing device for toaster appliance. 4,201,124, Cl. 99-327.000.

Hughes, David E.; and Pugh, George W., Jr., to United States of America, Agriculture. Veterinary ocular ring device for sustained drug release. 4,201,210, Cl. 128-260.000.

Hughes, Noel: *See*—
Ellis, Stephen R.; Bott, Theodore R.; Kay, Howard E.; and Hughes, Noel, 4,201,736, Cl. 261-98.000.

Hughes, O. Richard, to Celanese Corporation. Stabilized catalyst complex of rhodium metal, bidentate ligand and monodentate ligand. 4,201,714, Cl. 260-340.90R.

Hughes, O. Richard, to Celanese Corporation. Hydroformylation catalyst and process. 4,201,728, Cl. 568-454.000.

Huhne, Erwin D.; and Anders, Jochen H., to Castolin GmbH. Device for automatic depositing by welding. 4,201,341, Cl. 239-79.000.

Humphries, David F.: *See*—
Carr, Harold F., Jr.; and Humphries, David F., 4,201,399, Cl. 280-402.000.

Humphries, Peter E., to Contronic Controls Limited. Four wire multisatellite intrusion alarm with multiplex annunciation. 4,201,982, Cl. 340-506.000.

Hunt, James A. Emergency illumination apparatus. 4,201,005, Cl. 40-570.000.

Hunter, Don L.; and Woods, William G., to United States Borax & Chemical Corp. N^3-(Cycloalkyl)alkyl-2,4-dinitro-6-trifluoromethyl-1,3-phenylenediamine compounds. 4,201,724, Cl. 260-577.000.

Hunter, George C.: *See*—
Domenicali, Peter L.; and Hunter, George C., 4,201,473, Cl. 356-360.000.

Hunter, Lee. Wheel alignment checking device. 4,200,988, Cl. 33-203.200.

Hurley, Rupert B., to Badische Corporation. Process for purifying and activating aqueous inorganic salt solutions employed in the wet spinning of filamentary vinyl polymers. 4,201,740, Cl. 264-38.000.

Hurt, Wesley D.; and Koski, John P., to American Hospital Supply Corporation. Stable schiff reagent. 4,201,693, Cl. 252-408.000.

Hustler, Inc.: *See*—
Altmayer, John, 4,201,990, Cl. 343-747.000.

Hutchins, Ned M., to Occidental Oil Shale, Inc. Control of airblast during explosive expansion in an in situ oil shale retort. 4,201,419, Cl. 299-2.000.

Huyser, Marvin E.: *See*—
Anderson, Ardis L.; and Huyser, Marvin E., 4,201,657, Cl. 208-23.000.

Hyde, Donald B., Jr., to Hyde's Incorporated. Bird feeder. 4,201,155, Cl. 119-51.00R.

Hyde, Eric A., to British Steel Corporation. Cleaning coke oven doors or door jambs. 4,201,630, Cl. 202-241.000.

Hyde, Jack, to Koppers Company, Inc. Hot blast stove breast wall. 4,201,543, Cl. 432-217.000.

Hyde's Incorporated: *See*—
Hyde, Donald B., Jr., 4,201,155, Cl. 119-51.00R.

Iddon Brothers Limited: *See*—
Iddon, Michael I.; and Turner, Donald M., 4,201,481, Cl. 366-79.000.

Iddon, Michael I.; and Turner, Donald M., to Iddon Brothers Limited. Scrolls for extruding machines. 4,201,481, Cl. 366-79.000.

Igarashi, Kikuo; and Sugawara, Tamio, to Shionogi & Co., Ltd. Novel aminoglycoside derivatives. 4,201,774, Cl. 424-180.000.

Igari, Akira: *See*—
Kanno, Michio; and Igari, Akira, 4,201,673, Cl. 210-321.00B.
Igelbuscher, Heinrich: *See*—
Holter, Heinz; Gresch, Heinz; and Igelbuscher, Heinrich, 4,201,751, Cl. 423-210.000.
Ignatiev, Stanislav N.: *See*—
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P., 4,201,075, Cl. 72-204.000.
Iizuka, Haruhiko, to Nissan Motor Company, Limited. Split engine operation of closed loop controlled multi-cylinder internal combustion engine with air-admission valve. 4,201,180, Cl. 123-198.00F.
Ikekawa, Nobuo: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,201,881, Cl. 568-819.000.
Ikuta, Yoshiji: *See*—
Nakao, Masatane; and Ikuta, Yoshiji, 4,200,966, Cl. 29-243.500.
Ilsemann, Heino. Device for inserting tape cassettes or the like and enclosures particularly into hinged boxes. 4,201,027, Cl. 53-53.000.
Imamura, Nobutake; Mimura, Yoshinori; and Kobayashi, Toshihiko, to Kokusai Denshin Denwa Kabushiki Kaisha. Magnetic transfer record film and apparatus for magneto-optically reading magnetic record patterns using the same. 4,202,022, Cl. 360-114.000.
Imhauser, Gunter; Brauner, Dieter; and Muschelknautz, Edgar, to Bayer Aktiengesellschaft. Perforated mixing elements for static and dynamic mixers. 4,201,482, Cl. 366-98.000.
Imperial Chemical Industries Limited: *See*—
Edwards, Harry, 4,201,150, Cl. 118-323.000.
Imperial Oil Limited: *See*—
Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.
Ina, Toshikazu: *See*—
Kawai, Hisasi; and Ina, Toshikazu, 4,201,159, Cl. 123-32.0EB.
Inagaki, Mitsuo; Hattori, Yoshiyuki; and Taguchi, Masahiro, to Nippon Soken, Inc. AC Generator having a clawtooth rotor with irregular trapizoidal teeth. 4,201,930, Cl. 310-51.000.
Inahara, Hirohisa: *See*—
Naito, Ryoichi; Shiino, Satoru; and Inahara, Hirohisa, 4,201,776, Cl. 424-195.000.
Inami, Yasuhiko; Takechi, Sadatoshi; Hishida, Tadanori; Uede, Hisashi; and Take, Hiroshi, to Sharp Kabushiki Kaisha. Current controlled drive system for electrochromic displays of the segmented type. 4,201,984, Cl. 340-763.000.
Inami, Yasuhiko; Hishida, Tadanori; Yano, Kozo; Hamada, Hiroshi; and Nakauchi, Hiroshi, to Sharp Kabushiki Kaisha. Constant current supply drive for electrochromic displays of the segmented type. 4,201,985, Cl. 340-785.000.
Inco Limited: *See*—
O'Neill, Charles E.; Ettel, Victor A.; Villazor, Alfredo; and Garritsen, Peter G., 4,201,653, Cl. 204-263.000.
Ingelman, Bjorn G.; Richter, Ary W.; and Granath, Kirsti A., to Pharmacia Aktiebolag. Sterile aqueous solution of a mixture of isomalto-oligosaccharides and its use for parenteral administration to mammals. 4,201,772, Cl. 424-180.000.
Ingersoll, Clyde E.; and Agarwall, Dwarika P., to Williams Gold Refining Company Incorporated. Ceramic substrate alloy. 4,201,577, Cl. 75-134.00N.
Innocenti Santeustacchio S.p.A.: *See*—
Passoni, Teresio; Mascheroni, Alberto; and Calmes, Jean P., 4,201,097, Cl. 74-529.000.
Innovation Industries, Inc.: *See*—
Copeland, James S.; and Primm, Raymond, 4,201,910, Cl. 250-216.000.
Inomata, Akira: *See*—
Nagase, Tetsuo; Watanabe, Hideo; and Inomata, Akira, 4,202,021, Cl. 360-96.500.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,201,777, Cl. 428-212.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Carbonaceous bodies. 4,201,777, Cl. 428-212.000.
Inoue, Michihiro: *See*—
Kimura, Takeji; Takemoto, Toyoki; Inoue, Michihiro; and Sato, Masaharu, 4,201,106, Cl. 84-1.090.
Inoue, Shigeo; and Miyamoto, Norioki, to Kao Soap Company, Limited. Process for producing a hydroxyfatty acid ester. 4,201,844, Cl. 435-135.000.
Inoue, Takashi: *See*—
Kotani, Teizo; Inoue, Takashi; and Arai, Kozo, 4,201,848, Cl. 525-314.000.
Insolio, Thomas A., to Fletcher-Terry Company, The. Glass cutter. 4,201,104, Cl. 83-886.000.
Institut Francais du Petrole: *See*—
Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, 4,201,661, Cl. 208-139.000.
Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR: *See*—
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.
Institut Pasteur: *See*—
Gerlier, Jean-Pierre; and Augier, Jacques, 4,201,478, Cl. 356-440.000.
Institute Po Mechanika I Biomechanika: *See*—
Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., 4,201,340, Cl. 239-66.000.
Institutul National Pentru Creatie Stiintifica si Tehnica-Increst: *See*—
Teodorescu, Constantin; and Polizu, Radu, 4,201,141, Cl. 110-259.000.
International Business Machines Corp.: *See*—
Alcorn, George E.; Bergeron, David L.; and Stephens, Geoffrey B., 4,201,800, Cl. 430-5.000.
Beilstein, Kenneth E., Jr.; and Kotecha, Harish N., 4,202,044, Cl. 365-182.000.
Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., 4,201,464, Cl. 355-14.00R.
Chellis, Leroy N.; and Ellis, Theron L., 4,201,616, Cl. 156-307.100.
De La Moneda, F. H., 4,202,002, Cl. 357-22.000.
Dougherty, William E.; and Greer, Stuart E., 4,202,007, Cl. 357-80.000.
Epenoy, Gabriel I.; Kuhne, Roland; Laurent, Bernard; and Thirion, Philippe E., 4,202,039, Cl. 364-757.000.
Fyfe, Colin A.; Mossbrugger, Horst G.; and Yannoni, Costantino S., 4,201,941, Cl. 324-321.000.
Howard, James K.; Turene, Frank E.; and White, James F., 4,201,999, Cl. 357-15.000.
Lovgren, Jeffrey L.; and Quinlan, William P., 4,202,020, Cl. 360-75.000.
McCorkle, Richard A., 4,201,921, Cl. 250-493.000.
Patel, Arvind M., 4,201,976, Cl. 371-50.000.
International Flavors & Fragrances Inc.: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,201,639, Cl. 204-158.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.
International Nickel Co., Inc., The: *See*—
Subramanian, Kojur N.; Nissen, Norman C.; and Thomas, John A., 4,201,648, Cl. 204-112.000.
International Standard Electric Corporation: *See*—
Couch, Philip R.; and Philpott, David A., 4,201,884, Cl. 375-53.000.
Natens, Marcel C. R., 4,201,948, Cl. 331-8.000.
Thompson, George H. B.; and Selway, Peter R., 4,201,447, Cl. 350-96.310.
International Telephone and Telegraph: *See*—
Lawrence, Alan J.; Cotton, John M.; Hamer-Hodges, Kenneth J.; and Denenberg, Jeffrey N., 4,201,889, Cl. 320-68.000.
Lawrence, Alan J.; Denenberg, Jeffrey N.; Rubinstein, Murray; and Upp, Daniel C., 4,201,890, Cl. 370-68.000.
International Telephone and Telegraph Corporation: *See*—
Lawrence, Alan J.; Cotton, John M.; and Denenberg, Jeffrey N., 4,201,891, Cl. 370-58.000.
Maklad, Mokhtar S.; and Pureza, Pablo C., 4,201,151, Cl. 118-642.000.
McCartney, Ronald L.; Arnold, Bruce K.; and Hogan, Vaughn C., 4,201,444, Cl. 350-96.210.
Paptzun, George J.; Hall, Collin C.; and Bullwinkle, Benjamin B., 4,201,365, Cl. 251-328.000.
International Totalizing Systems, Inc.: *See*—
Otten, David M., 4,201,907, Cl. 235-92.0AC.
International Wool Secretariat: *See*—
Benisek, Ladislav, 4,201,805, Cl. 427-389.000.
Inukai, Masatoshi: *See*—
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, 4,201,769, Cl. 424-117.000.
Iori, Giuseppe: *See*—
Paret, Giancarlo; Vetere, Alessandro; and Iori, Giuseppe, 4,201,633, Cl. 203-58.000.
Iowa State University Research Foundation, Inc.: *See*—
Al-Jalil, Hamid, 4,201,227, Cl. 130-8.000.
Ipri, Alfred C.: *See*—
Scott, Joseph H., Jr.; and Ipri, Alfred C., 4,201,603, Cl. 148-174.000.
Ipsen Industries International GmbH: *See*—
Luiten, Cornelis H.; and Gohring, Werner, 4,201,600, Cl. 148-16.500.
Irelan, Edward A.; Bartlett, Robert L.; and Walch, John W., to McGraw-Edison Company. Shield for grass trimmer. 4,200,978, Cl. 30-276.000.
Irie, Akiyoshi, to Unimation, Inc. Control apparatus for programmable manipulator. 4,201,937, Cl. 318-568.000.
Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft: *See*—
Kirsch, Kurt; Hilzensauer, Volkmar; Pflug, Gunther; Wehrmann, Felix; and Maresch, Gerald, 4,201,833, Cl. 428-404.000.
ITI Limited: *See*—
Mougin, Georges L., 4,201,498, Cl. 405-303.000.
Ito, Fumio: *See*—
Harigaya, Isao; Taguchi, Tetsuya; Ito, Fumio; and Yazaki, Mutsunobu, 4,201,463, Cl. 354-86.000.
Ito, Ichizo; Aga, Toshio; and Ando, Tetsuo, to Yokogawa Electric Works, Ltd. Vortex flow meter. 4,201,084, Cl. 73-194.0VS.
Ito, Syoichi; and Suzuki, Mithuo, to Hitachi, Ltd. Ink jet printer using inflammable ink. 4,201,993, Cl. 346-75.000.
Itoh, Kunio; and Oshima, Toshimichi, to Shin-Etsu Chemical Co., Ltd. Rubber compositions. 4,201,698, Cl. 260-3.000.
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, to Sankyo Company Limited. Antibiotic substances No. 17927A_1 and No.

17927A_2 and process for producing the same. 4,201,769, Cl. 424-117.000.

ITT Industries, Incorporation: *See*—
Pitt, Gillies D.; and Gregorig, Stephen I. N., 4,201,471, Cl. 356-70.000.

J. & A. Atlas Nominees Pty. Ltd: *See*—
Hoogenbosch, Thomas C., 4,201,400, Cl. 280-511.000.

J. I. Case Company: *See*—
Frisbee, Claude M., 4,201,268, Cl. 172-804.000.

Jackson, Stanley P., to Firth Carpets Limited. Cam driven sliding needle bar. 4,201,143, Cl. 112-79.00R.

Jackson, Theodore; and Johnson, Ken, to Jackson, Theodore. Airport landing indicator apparatus. 4,201,973, Cl. 340-26.000.

Jackson, Winston J., Jr.; and Morris, John C., to Eastman Kodak Company. Liquid crystal copolyesters containing terephthalic acid, 2,6-naphthalenedicarboxylic acid, hydroquinone and resorcinol. 4,201,856, Cl. 528-190.000.

Jacob, Keith D., to Hassinger, Donald F. Wide angled rear view mirror apparatus. 4,201,451, Cl. 350-278.000.

Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; and Carswell, William, to E. B. Metal Rubber Industries, Inc. Pilferage protection for satellite vending machine having dual pricing capability. 4,201,283, Cl. 194-1.00A.

Jacobson, Paul R.: *See*—
Scheinhaus, Myron G.; and Jacobson, Paul R., 4,200,997, Cl. 36-11.500.

Jacobson, Sava. Remote playout telephone answering device. 4,201,888, Cl. 179-6.00E.

Jacobsthal, Herbert K.: *See*—
Friedman, Stanley I.; Cobeen, Charles P.; and Jacobsthal, Herbert K., 4,201,980, Cl. 340-347.0DD.

Jacoby, George V.: *See*—
Geffon, Arthur P.; and Jacoby, George V., 4,202,017, Cl. 360-45.000.

Jaggle, Gunther; Scharl, Herbert; and Krauss, Rudolf, to Robert Bosch GmbH. Fuel injection nozzle assembly for internal combustion engines. 4,201,172, Cl. 123-139.0AW.

James Brown & Sons Limited: *See*—
Widmer, Colin F., 4,201,372, Cl. 266-270.000.

James, Howard: *See*—
Holman, David J.; and James, Howard, 4,201,643, Cl. 204-180.00R.

Janik, John W. Signal and receptacle combination. 4,201,334, Cl. 232-34.000.

Japan Atomic Energy Research Institute: *See*—
Gotoda, Masao; Okada, Toshio; Murata, Kazuo; and Takahashi, Kusuhiko, 4,201,641, Cl. 204-159.170.

Japan Synthetic Rubber Co., Ltd.: *See*—
Kotani, Teizo; Inoue, Takashi; and Arai, Kozo, 4,201,848, Cl. 525-314.000.

Jarman, Davis R.; and Hinson, Virgil H. Front end alignment system. 4,201,076, Cl. 72-392.000.

Jasulaitis, William A.: *See*—
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,201,655, Cl. 208-8.0LE.

Jean, Albert L. Cigarette retarding and snuffing device. 4,201,233, Cl. 131-237.000.

Jeco Company Limited: *See*—
Tanaka, Toyonaru, 4,201,041, Cl. 368-85.000.

Jellinek, Karl; and Muller, Rolf, to Rutgerswerke Aktiengesellschaft. Boiling water and weather resistant cellulose fiber reinforced board material. 4,201,835, Cl. 428-288.000.

Jenaer Glaswerk Schott & Gen.: *See*—
Scheidler, Herwig; Wennemann, Dietmar; and Schwank, Bernd, 4,201,184, Cl. 126-39.00J.

Jennings, Gary L., to Pyramid Manufacturing Company. Wheeled portable well drilling and workover apparatus. 4,201,022, Cl. 52-118.000.

Jensen, Harbo P., to Chevron Research Company. Pour point depressant made from the asphaltene component of thermally treated shale oil. 4,201,658, Cl. 208-39.000.

Jessiman, Alexander F.: *See*—
Crawford, Henry; and Jessiman, Alexander F., 4,201,410, Cl. 294-83.00R.

Jochum, Peter, to Hilti Aktiengesellschaft. Fastening element setting device. 4,201,325, Cl. 227-9.000.

John, E. Roy. Electroencephalographic method and system for the quantitative description of patient brain states. 4,201,224, Cl. 128-731.000.

John Nolan Design Limited: *See*—
Nolan, John P. S., 4,201,035, Cl. 57-6.000.

John Zink Company: *See*—
Zink, John S.; and Reed, Robert D., 4,201,191, Cl. 126-360.00A.

Johnson, Bernard A.; and Gardner, Frederick P., to Mangood Corporation. Measurement and recording apparatus and system. 4,201,908, Cl. 235-92.0TC.

Johnson, Burnett H., to Exxon Research & Engineering Co. Microcellular heterocyclic polymer structures. 4,201,820, Cl. 428-195.000.

Johnson, David R., to United States of America, Energy. Preparation of U_3O_8. 4,201,738, Cl. 264-0.500.

Johnson, Frank S., to Marvel Metal Products Company. Cabinet assembly. 4,201,428, Cl. 312-257.00R.

Johnson, Jack W.; and Whittingham, M. Stanley, to Exxon Research and Engineering Co. Cell containing an alkali metal anode, a solid cathode, and a closoborane and/or closocarborane electrolyte. 4,201,839, Cl. 429-194.000.

Johnson, Ken: *See*—
Jackson, Theodore; and Johnson, Ken, 4,201,973, Cl. 340-26.000.

Johnson, Marvin M.: *See*—
Wu, Yulin; Johnson, Marvin M.; and Nowack, Gerhard P., 4,201,875, Cl. 568-575.000.

Johnston, Reece W., to Advance Dental Corporation. Orthodontic formulation and method. 4,200,980, Cl. 433-8.000.

Johren, Paul: *See*—
Stecher, Friedhelm; Fazekas, Josef; Johren, Paul; and Morsbach, Martin, 4,201,804, Cl. 427-393.600.

Jones, Colin, to Linkman Building Company Limited. Greenhouses. 4,201,019, Cl. 52-15.000.

Jones, Harry; and Slater, David L., to Ferranti Limited. Inertia switches. 4,201,898, Cl. 200-61.45R.

Jones, Ira D. Viewing rod for determining the level of liquid within a receptacle. 4,201,086, Cl. 73-327.000.

Jones, Jesse D.: *See*—
Zorzi, Paul A.; Jones, Jesse D.; and Kucsma, Michael E., 4,201,703, Cl. 260-37.0PC.

Jorcin, Serge: *See*—
Blanc, Roger; and Jorcin, Serge, 4,200,993, Cl. 34-104.000.

Jordan College: *See*—
Coxon, DeWayne A.; and Gates, Timothy P., 4,201,192, Cl. 126-422.000.

Jost, Heinrich: *See*—
Straub, Paul; and Jost, Heinrich, 4,201,287, Cl. 198-530.000.

Joyce, Glover C.: *See*—
Kirk, Calvin K.; Joyce, Glover C.; and Messier, Francis L., 4,201,016, Cl. 51-105.0SP.

Joyce, Hardin, Jr., to Fiat-Allis Construction Machinery, Inc. Vehicle axle suspension system. 4,201,273, Cl. 180-12.000.

Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, to Institut Francais du Petrole. Process for producing aromatics of high purity from oil cuts. 4,201,661, Cl. 208-139.000.

Jumpak Products Inc.: *See*—
Fima, Raoul G., 4,201,974, Cl. 340-52.00A.

Jungbluth, Otto. Three-dimensional structures made of beams and plates. 4,201,023, Cl. 52-334.000.

Junkers, John K. Hydraulic wrench. 4,201,099, Cl. 81-57.390.

Juntgen, Harald; Knoblauch, Karl; Grochowski, Horst; and Schwarte, Jurgen, to Bergwerksverband GmbH. Arrangement for regenerating particulate adsorbents. 4,201,695, Cl. 252-411.00R.

Jurida, Vladslav J. Kitchen utensil. 4,200,958, Cl. 17-29.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Kondo, Kenichi, 4,201,038, Cl. 368-73.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Kitagawa, Hiroshi, 4,201,109, Cl. 84-1.260.

Kabushiki Kaisha Saginomiya Seisakusho: *See*—
Nishimi, Ichiro; and Ohira, Hideaki, 4,201,362, Cl. 251-29.000.

Kabushiki Kaisha Sato: *See*—
Sato, Yo, 4,201,134, Cl. 101-288.000.

Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,201,133, Cl. 101-288.000.
Sato, Yo, 4,201,619, Cl. 156-384.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Tarusawa, Yasutaka, 4,201,043, Cl. 368-10.000.

Kadan, Ranjit S.; Freeman, Donald W.; Spadaro, James J.; and Ziegler, George M., Jr., to United States of America, Agriculture. Process for producing a low gossypol protein product from glanded cottonseed. 4,201,709, Cl. 260-123.500.

Kagayama, Joe, to Tsuyama Manufacturing Company, Ltd. Reflector for spokewise wheels. 4,201,448, Cl. 350-99.000.

Kageyama, Hidehei: *See*—
Kageyama, Toshihiko; and Kageyama, Hidehei, 4,200,977, Cl. 30-162.000.

Kageyama, Toshihiko; and Kageyama, Hidehei, to Kotobuki & Co. Ltd. Cutter knife. 4,200,977, Cl. 30-162.000.

Kahler, Werner. Live poultry conveying, counting and crating device. 4,201,156, Cl. 119-82.000.

Kamath, Venkatesh: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

Kamfe, Eberhard; and Schmidt, Willi, to Erwin Kampf GmbH & Co. Machinenfabrik, Firma. Machine for simultaneous biaxially stretching. 4,200,963, Cl. 26-73.000.

Kamiyama, Satoru: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro, 4,201,644, Cl. 204-181.00C.

Kanbier, Dirk: *See*—
Kwant, Pieter B.; Kanbier, Dirk; Tjan, Petrus W. H. L.; and Akbar, Mohammed, 4,201,659, Cl. 208-73.000.

Kaneko, Tsugio: *See*—
Minagawa, Yukinori; Kaneko, Tsugio; and Yamaguchi, Kunihiko, 4,201,747, Cl. 423-21.500.

Kanno, Michio; and Igari, Akira, to Terumo Corporation. Apparatus for dialysis of solution. 4,201,673, Cl. 210-321.00B.

Kao Soap Company, Limited: *See*—
Inoue, Shigeo; and Miyamoto, Norioki, 4,201,844, Cl. 435-135.000.

Kaplan, Barbara W., to Union Carbide Corporation. Water soluble pesticidal quaternary ammonium salt compounds. 4,201,786, Cl. 424-282.000.

Kaplow, Roy; and Molnar, Michael K., to Massachusetts Institute of Technology. Dynamically variable keyboard terminal. 4,202,041, Cl. 364-900.000.
Karacsonyi, Paul: *See*—
Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst. 4,201,547, Cl. 8-543.000.
Kasai, Akio: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro. 4,201,644, Cl. 204-181.00C.
Katayama, Akira; and Shimoi, Osamu. Knob for a door lock. 4,201,069, Cl. 70-422.000.
Katchka, Jay R.; and Kelly, Samuel T., to Robertshaw Controls Company. Method of manufacturing a solenoid. 4,200,972, Cl. 29-602.00R.
Kathawala, Faizulla G., to Sandoz Inc. Cyclopropanyl-bearing hydrazides. 4,201,785, Cl. 424-274.000.
Kato Electric and Machinery Co. Ltd.: *See*—
Koyahata, Hirosi; and Hioki, Shunkichi. 4,201,390, Cl. 274-15.00R.
Kato, Hisakatsu: *See*—
Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu. 4,201,749, Cl. 423-127.000.
Kato, Hisao: *See*—
Doi, Koichi; Kato, Hisao; and Kurauchi, Takeo. 4,201,592, Cl. 106-2.000.
Kato, Yoshito: *See*—
Fukuma, Nobuo; and Kato, Yoshito. 4,201,935, Cl. 318-15.000.
Katsuda, Yoshio; and Minamite, Yoshihiro, to Dainippon Jochugiku Kabushiki Kaisha. Isovaleric acid ester derivatives, and insecticides containing said derivatives. 4,201,787, Cl. 424-304.000.
Kauzal, Gabriel P. Organic fertilizer. 4,201,564, Cl. 71-20.000.
Kawai, Hisasi; and Ina, Toshikazu, to Nippon Soken, Inc. Electronic control method and apparatus for combustion engines. 4,201,159, Cl. 123-32.0EB.
Kawakami, Akihiro: *See*—
Yoshikawa, Hiroshi; Kawakami, Akihiro; and Sato, Hideaki. 4,202,029, Cl. 361-394.000.
Kawakami Kagaku Kogyo Company Ltd.: *See*—
Sumitani, Kenji. 4,201,794, Cl. 426-96.000.
Kawamura, Hideo: *See*—
Miyanohara, Isao; Miyazaki, Hiroshi; and Kawamura, Hideo. 4,201,668, Cl. 210-51.000.
Kawamura, Masao, to Kitamura Valve Seizo Kabushiki Kaisha. Sealing device for a valve. 4,201,239, Cl. 137-72.000.
Kawamura, Norio: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro. 4,201,644, Cl. 204-181.00C.
Kawasaki, Toshihiro: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro. 4,201,644, Cl. 204-181.00C.
Kawashima, Yoshinori; Watanabe, Masaki; and Kinoshita, Katsuharu, to Honda Giken Kogyo Kabushiki Kaisha. Linked chain with improved sealing rings. 4,201,393, Cl. 277-92.000.
Kay, Howard E.: *See*—
Ellis, Stephen R.; Bott, Theodore R.; Kay, Howard E.; and Hughes, Noel. 4,201,736, Cl. 261-98.000.
Kaye, Paul, to Aquafilter Corporation. Cigarette holder with filter. 4,201,232, Cl. 131-187.000.
Kehr, Clifton L.; Wood, Louis L.; Marans, Nelson S.; and Fulmer, Glenn E., to W. R. Grace & Co. Dimensionally stable polyurethane foam. 4,201,846, Cl. 521-137.000.
Keller, Rene, to Emhart Zurich S. A. Mold identification. 4,201,338, Cl. 235-454.000.
Kelly, Samuel T.: *See*—
Katchka, Jay R.; and Kelly, Samuel T., 4,200,972, Cl. 29-602.00R.
Kent-Moore Corporation: *See*—
De Martelaere, David L.; and Bogard, William E., 4,201,056, Cl. 60-584.000.
Kenyon, Jack, to Moseley Rubber Co. Ltd., The. Cake displacement means for filter presses. 4,201,672, Cl. 210-225.000.
Keohring Company: *See*—
Briggs, Eugene C.; and Gustafson, William E., 4,201,544, Cl. 432-222.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Erdtmann, Gerhard; Sastri, Chaturvedula; Kuppers, Gottfried; and Petri, Hermann. 4,201,625, Cl. 176-11.000.
Heitkamp, Dieter. 4,201,827, Cl. 428-283.000.
Ketchum, Frank W.: *See*—
Holman, Rudolph G.; and Ketchum, Frank W., 4,201,177, Cl. 124-23.00R.
Keystone Consolidated Industries, Inc.: *See*—
Orr, John L., 4,201,427, Cl. 312-21.000.
Khajezadeh, Heshmat, to RCA Corporation. Semiconductor integrated circuit device. 4,202,006, Cl. 357-63.000.
Kienberger, Karl-Heinz; and Stock, Don J. R., to Endress u. Hauser GmbH u. Co. Arrangement for the generation and radiation of microwaves. 4,201,956, Cl. 331-96.000.
Kikumoto, Ryoji: *See*—
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji. 4,201,863, Cl. 546-166.000.
Kimura, Masaharu; Otuki, Yoshiharu; Sugio, Akitoshi; and Furusawa, Tomotaka, to Mitsubishi Gas Chemical Company, Inc. Acetal resin composition. 4,201,849, Cl. 525-401.000.
Kimura, Masayuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Illumination device for motor vehicles. 4,202,030, Cl. 362-61.000.
Kimura, Takeji; Takemoto, Toyoki; Inoue, Michihiro; and Sato, Masaharu, to Matsushita Electric Industrial Co., Ltd. Electronic musical instrument. 4,201,106, Cl. 84-1.090.
Kimura, Tsuneo; and Hashizume, Hiroshi, to Mitsubishi Chemical Industries Ltd. Process for preparing purified terephthalic acid. 4,201,872, Cl. 562-487.000.
King, Reginald, to Evershed Power-Optics Limited. Production of composite images. 4,202,008, Cl. 358-22.000.
Kinoshita, Katsuharu: *See*—
Kawashima, Yoshinori; Watanabe, Masaki; and Kinoshita, Katsuharu, 4,201,393, Cl. 277-92.000.
Kipp, Henry A.: *See*—
Verner, David A.; and Kipp, Henry A., 4,201,527, Cl. 425-72.00R.
Kirchberger, Peter: *See*—
Kralowetz, Bruno; and Kirchberger, Peter, 4,201,500, Cl. 407-43.000.
Kirk, Calvin K.; Joyce, Glover C.; and Messier, Francis L., to Warner & Swasey Company, The. Apparatus for grinding a workpiece. 4,201,016, Cl. 51-105.0SP.
Kirsch, Jerry, to Auto-Place, Inc. Hopper feeder for singly dispensing short rods or tubes. 4,201,313, Cl. 221-171.000.
Kirsch, Kurt; Hilzensauer, Volkmar; Pflug, Gunther; Wehrmann, Felix; and Maresch, Gerald, to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft. Building material elements, particularly building boards, and a process for their production. 4,201,833, Cl. 428-404.000.
Kiscaden, Roy W.: *See*—
Vani, Elo N.; and Kiscaden, Roy W., 4,201,045, Cl. 60-39.09R.
Kish, Edward E.: *See*—
Danko, Oliver L.; Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; and Kish, Edward E., 4,201,366, Cl. 251-335.00B.
Kishi, Hiroyoshi: *See*—
Matsumoto, Masakazu; Yokono, Koujiro; Tanaka, Takashi; Toganou, Shigeo; Kishi, Hiroyoshi; and Nishide, Katsuhiko, 4,201,441, Cl. 350-3.610.
Kitagawa, Hiroshi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Envelope waveform generator for electronic musical instruments. 4,201,109, Cl. 84-1.260.
Kitamura, Takashi: *See*—
Hoshito, Kazuo; Sato, Hideaki; Kitamura, Takashi; and Masegi, Koichi, 4,201,994, Cl. 346-108.000.
Kitamura Valve Seizo Kabushiki Kaisha: *See*—
Kawamura, Masao, 4,201,239, Cl. 137-72.000.
Kitchen, Roger M.; and Braithwaite, Dennis, to Deborah Services Limited. Girder roller fittings. 4,200,955, Cl. 16-106.000.
Kiwala, Jacob: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,201,639, Cl. 204-158.00R.
Klank, Otto, to Licentia Patent-Verwaltungs-G.m.b.H. Tuning circuit for a high frequency heterodyne receiver with tuning controlled by direct voltage. 4,201,943, Cl. 455-185.000.
Kleimann, Helmut; von Bonin, Wulf; and Schneider, Heinz-Georg, to Bayer Aktiengesellschaft. Process of preparing foams with internal mold-release agents. 4,201,847, Cl. 521-172.000.
Klein, Gerald I., to Westinghouse Electric Corp. Unidirectional phase shifter. 4,201,961, Cl. 333-24.100.
Klein, Martin. Multi-angular sector sound transmitting and receiving system. 4,202,050, Cl. 367-105.000.
Klimenko, Valentin M.: *See*—
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P., 4,201,075, Cl. 72-204.000.
Klingaman, Richard J.; and Boyce, Arthur V., Jr., to Colgate-Palmolive Company. Capsule package. 4,201,300, Cl. 206-45.190.
Klingaman, Richard J., to Colgate-Palmolive Company. Capsule having frangible wall portion. 4,201,316, Cl. 222-80.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, 4,201,546, Cl. 432-106.000.
Nissen, Reinhard, 4,201,573, Cl. 75-109.000.
Zickgraf, Karl, 4,201,745, Cl. 422-199.000.
Knabe, Bernd: *See*—
Bormann, Dieter; Knabe, Bernd; Schrinner, Elmar; and Worm, Manfred, 4,201,779, Cl. 424-246.000.
Knight, Milton R.: *See*—
Romerdahl, Ronald W.; and Knight, Milton R., 4,201,967, Cl. 337-354.000.
Knoblauch, Karl: *See*—
Juntgen, Harald; Knoblauch, Karl; Grochowski, Horst; and Schwarte, Jurgen, 4,201,695, Cl. 252-411.00R.
Knutson, Arthur O.: *See*—
Bumgarner, Robert L.; and Knutson, Arthur O., 4,201,299, Cl. 206-554.000.
Kobale, Manfred; Pink, Hans; and Schaefer, Helwig, to Siemens Aktiengesellschaft. Liquid crystal cell having an insulating layer of a silicon oxide base. 4,201,453, Cl. 350-340.000.
Kobayashi, Kazuo: *See*—
Tanaka, Kazuyuki; Kobayashi, Kazuo; Okabe, Itsuro; and Tanaka, Toshimitsu, 4,201,175, Cl. 123-191.00M.
Kobayashi, Toshihiko: *See*—
Imamura, Nobutake; Mimura, Yoshinori; and Kobayashi, Toshihiko, 4,202,022, Cl. 360-114.000.

Kobayashi, Yoshiro: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,201,881, Cl. 568-819.000.

Koert, Hubert: *See—*
Triebel, Wolfgang; Hari, Siegfried; Koert, Hubert; and Evers, Fritz, 4,201,828, Cl. 428-332.000.

Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, to BASF Aktiengesellschaft. Apparatus for spin coating in the production of thin magnetic layers for magnetic discs. 4,201,149, Cl. 118-52.000.

Koester, Eberhard: *See—*
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.

Koetsch, Philip W., to NCR Corporation. Power transistor actuating and bootstrap drive circuit. 4,201,928, Cl. 307-270.000.

Koga, Toshio, to Nippon Electric Co., Ltd. Television signal coder. 4,202,011, Cl. 358-136.000.

Kohler, Henry A., to Truly Magic Products, Inc. Liquid applicator. 4,201,491, Cl. 401-264.000.

Kohn, Gary A.: *See—*
Arendt, Henry P.; Deaton, Thomas M.; and Kohn, Gary A., 4,201,363, Cl. 251-62.000.

Kokubo, Eiichi: *See—*
Miyagawa, Tuyoshi; Kokubo, Eiichi; and Yoshida, Minoru, 4,201,131, Cl. 101-4.000.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Niiro, Yasuhiko; and Wakabayashi, Hiroharu, 4,201,959, Cl. 333-16.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Imamura, Nobutake; Mimura, Yoshinori; and Kobayashi, Toshihiko, 4,202,022, Cl. 360-114.000.

Kokusan Denki Co., Ltd.: *See—*
Nanjo, Hirotoshi; and Boyama, Kimihiro, 4,201,171, Cl. 123-148.0AC.

Kolk, Michael R.; Beck, Ralph E.; and Hoyle, Roy E., to Carrier Corporation. Impeller for a centrifugal machine. 4,201,516, Cl. 416-213.00R.

Kollross, Gunter. Method and apparatus for shirring of synthetic tubes, particularly casings for sausage production. 4,200,960, Cl. 17-42.000.

Kolotilo, Daniil M.; Fursov, Viktor V.; Cherevaty, Anatoly A.; Mazovsky, Nikolai D.; Goncharov, Leonid M.; and Apatova, Larisa D. Induction melting furnace. 4,201,882, Cl. 13-27.000.

Komiya, Toshio: *See—*
Tomita, Masatsugu; Takase, Yoshiyuki; and Komiya, Toshio, 4,201,781, Cl. 424-246.000.

Kondo, Kenichi, to Kabushiki Kaisha Daini Seikosha. Alarm electronic watch. 4,201,038, Cl. 368-73.000.

Konen, Jerome P., Sr. Chain stretcher apparatus. 4,201,367, Cl. 254-67.000.

Kopp, Hermann, to Max Weishaupt GmbH. Large burners, particularly for liquid fuels. 4,201,538, Cl. 431-351.000.

Koppers Company, Inc.: *See—*
Hyde, Jack, 4,201,543, Cl. 432-217.000.

Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. 2-Azaergolines and 2-aza-8(or 9)-ergolenes. 4,201,862, Cl. 546-67.000.

Korver, Jan A. C.: *See—*
van Hattum, Johannes S. A.; and Korver, Jan A. C., 4,202,013, Cl. 358-158.000.

Korzekwa, Samuel M.: *See—*
Hesler, Joseph P.; Korzekwa, Samuel M.; and McFadyen, Robert J., 4,202,031, Cl. 363-97.000.

Koski, John P.: *See—*
Hurt, Wesley D.; and Koski, John P., 4,201,693, Cl. 252-408.000.

Kosseim, Alexander J. M.; Atwood, Gilbert R.; and Sokolik, Joseph E., Jr., to Union Carbide Corporation. Process for the selective removal of sulfur dioxide from effluent gases. 4,201,752, Cl. 423-235.000.

Kotani, Teizo; Inoue, Takashi; and Arai, Kozo, to Japan Synthetic Rubber Co., Ltd. Process for preparing polymers having high molecular weight. 4,201,848, Cl. 525-314.000.

Kotecha, Harish N.: *See—*
Beilstein, Kenneth E., Jr.; and Kotecha, Harish N., 4,202,044, Cl. 365-182.000.

Kotobuki & Co. Ltd.: *See—*
Kageyama, Toshihiko; and Kageyama, Hidehei, 4,200,977, Cl. 30-162.000.

Kotzab, Werner: *See—*
Freund, Hans; and Kotzab, Werner, 4,201,425, Cl. 308-236.000.

Kowaka, Masamichi; and Fujikawa, Hisao, to Sumitomo Metal Industries, Ltd. Low carbon Ni-Cr austenitic steel having an improved resistance to stress corrosion cracking. 4,201,574, Cl. 75-122.000.

Koyahata, Hirosi; and Hioki, Shunkichi, to Kato Electric and Machinery Co. Ltd. Semi-automatic record player. 4,201,390, Cl. 274-15.00R.

Kralowetz, Bruno; and Kirchberger, Peter, to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft. Profile milling cutter for a circular milling of cylindrical portions of crankshafts. 4,201,500, Cl. 407-43.000.

Krasnobajew, Victor; and Boeniger, Regula, to Givaudan Corporation. Novel condensation products having high activity to insolubilize proteins and protein-insolubilized products. 4,201,857, Cl. 525-398.000.

Krauss, Rudolf: *See—*
Jaggle, Gunther; Scharl, Herbert; and Krauss, Rudolf, 4,201,172, Cl. 123-139.0AW.

Kravchenko, Iya M.: *See—*
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.

Krbechek, Leroy O., to Henkel Corporation. Preparation of 22-steroid acetals. 4,201,716, Cl. 260-397.400.

Krug, Martin; and Bihl, Paul R., to Sutrak Transportkalte, GmbH & Co. Air conditioner for a bus. 4,201,064, Cl. 62-239.000.

Kruger, James B.: *See—*
Darley, Henry M.; Houston, Theodore W.; and Kruger, James B., 4,201,997, Cl. 357-15.000.

Krupp-Koppers GmbH: *See—*
Wiemer, Erich, 4,201,346, Cl. 241-66.000.

Ku, Katharine: *See—*
Feder, Joseph; Ku, Katharine; and Ku, Mau-Jung, 4,201,845, Cl. 435-285.000.

Ku, Mau-Jung: *See—*
Feder, Joseph; Ku, Katharine; and Ku, Mau-Jung, 4,201,845, Cl. 435-285.000.

Kubodera, Seiiti: *See—*
Sakaguchi, Shinji; Kubodera, Seiiti; Arakawa, Jun; Shiba, Keisuke; and Tsuji, Nobuo, 4,201,589, Cl. 430-139.000.

Kucheck, Leo: *See—*
Crankshaw, Michael; and Kucheck, Leo, 4,201,621, Cl. 156-567.000.

Kucsma, Michael E.: *See—*
Zorzi, Paul A.; Jones, Jesse D.; and Kucsma, Michael E., 4,201,703, Cl. 260-37.0PC.

Kudlich, Hans: *See—*
Zimmer, Peter; and Kudlich, Hans, 4,201,132, Cl. 101-118.000.

Kuehn, Lorne A.; and Pogorski, Louis A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Heat receiver for divers. 4,201,206, Cl. 128-201.130.

Kuhne, Roland: *See—*
Epenoy, Gabriel I.; Kuhne, Roland; Laurent, Bernard; and Thirion, Philippe E., 4,202,039, Cl. 364-757.000.

Kuhs, Rudolf: *See—*
Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, 4,201,546, Cl. 432-106.000.

Kula, John S.: *See—*
Masiello, Felix R.; and Kula, John S., 4,201,354, Cl. 242-71.700.

Kulsa, Peter: *See—*
Mrozik, Helmut H.; Fisher, Michael H.; and Kulsa, Peter, 4,201,861, Cl. 536-17.00A.

Kung, Herbert. Concrete form component. 4,201,361, Cl. 249-183.000.

Kung, Roger I.; and Moench, Jerry D., to Motorola, Inc. Write circuit for a read/write memory. 4,202,045, Cl. 365-203.000.

Kunze, Dieter, to Siemens Aktiengesellschaft. Plug connection for light-wave conductors. 4,201,445, Cl. 350-96.210.

Kuppers, Gottfried: *See—*
Erdtmann, Gerhard; Sastri, Chaturvedula; Kuppers, Gottfried; and Petri, Hermann, 4,201,625, Cl. 176-11.000.

Kurauchi, Takeo: *See—*
Doi, Koichi; Kato, Hisao; and Kurauchi, Takeo, 4,201,592, Cl. 106-2.000.

Kurbitz, Gunther; Wegener, Walter; and Weinheimer, Hans-Richard, to Carl Zeiss-Stiftung. Apparatus for protecting the target of an image-producing tube from injuriously high local current densities. 4,201,931, Cl. 315-10.000.

Kurei, Hiroshi: *See—*
Uno, Naoyuki; Urano, Fumio; Tano, Eiichi; and Kurei, Hiroshi, 4,201,462, Cl. 354-289.000.

Kurii, Masaaki: *See—*
Hattori, Tadashi; Nishida, Minoru; Ueno, Yoshiki; Makita, Kunio; and Kurii, Masaaki, 4,201,163, Cl. 123-117.00R.

Kurita, Yoshio; and Shibata, Yukitake, to Yokogawa Electric Works, Ltd. Velocity detecting apparatus. 4,201,083, Cl. 73-194.00E.

Kurtz, Walter; Horn, Dieter; and Ditter, Walter, to BASF Aktiengesellschaft. Azo dyes of the pyridone series useful for flowable printing inks. 4,201,710, Cl. 260-156.000.

Kuttler, Otto, to A. Raymond. Sheet metal fastener and method of making. 4,201,111, Cl. 85-32.00V.

Kuwabara, Takao; Okumura, Hiroshi; and Yokoyama, Toshiaki, to Hitachi, Ltd. Method for starting hydraulic turbine generator. 4,201,925, Cl. 290-52.000.

Kwant, Pieter B.; Kanbier, Dirk; Tjan, Petrus W. H. L.; and Akbar, Mohammed, to Shell Oil Company. Process for the preparation of gas oil. 4,201,659, Cl. 208-73.000.

La Calhene: *See—*
Glachet, Charles, 4,201,310, Cl. 220-256.000.

Labaz: *See—*
Pigerol, Charles; Eymard, Pierre; Vernieres, Jean-Claude; Werbenec, Jean-Pierre; and Epse Broll, Madeleine C., 4,201,725, Cl. 260-583.00H.

Label-Aire Inc.: *See—*
Crankshaw, Michael; and Kucheck, Leo, 4,201,621, Cl. 156-567.000.

Lafitte, George A., Jr., to Lockheed Corporation. Plastic/composite structural panel. 4,201,024, Cl. 52-394.000.

Lagasse, Alain: *See—*
Violland, Robert; and Lagasse, Alain, 4,201,824, Cl. 428-262.000.

Lagsdin, Andry, to American Zephyr Corporation. Sled and slide construction. 4,201,137, Cl. 104-69.000.

Lambert, Joe. Portable animal handling unit. 4,201,157, Cl. 119-82.000.

Lane, John H., to McDonnell Douglas Corporation. Modulo addressing apparatus for use in a microprocessor. 4,202,035, Cl. 364-200.000.

Langbein, Adolf: *See—*
Weber, Karl-Heinz; Bauer, Adolf; and Langbein, Adolf, 4,201,712, Cl. 260-244.400.

Langer, Karoly: *See—*
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.

Langguth, Robert P.: *See—*
Crutchfield, Marvin M.; Langguth, Robert P.; and Mayer, James M., 4,201,687, Cl. 252-102.000.

Lapple, Charles E.: *See—*
Marynowski, Chester W.; Lewis, F. Michael; Lapple, Charles E.; Murray, Robert G.; and Semrau, Konrad T., 4,201,512, Cl. 415-90.000.

Lardon, Marcel A., to Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten. Device for measuring the reflection of a plane, specularly reflecting surface. 4,201,479, Cl. 356-445.000.

Larson, Donald A.; and Reichert, Theodore J., to Hartzell Manufacturing, Inc. Storage case. 4,201,298, Cl. 206-387.000.

Larson, Roger G. Apparatus for determining the liquid level in a tank. 4,201,085, Cl. 73-304.00C.

Latimer, John P., to Deepsea Ventures, Inc. Pivotable means for decreasing drag effects on a generally cylindrical dredge pipe. 4,200,999, Cl. 37-54.000.

Latzer, Beda, to Sulzer Brothers Limited. Apparatus for the electron beam irradiation of a flowable material, more particularly sewage sludge. 4,201,918, Cl. 250-433.000.

Laurel Bank Machine Co., Ltd.: *See—*
Miyagawa, Tuyoshi; Kokubo, Eiichi; and Yoshida, Minoru, 4,201,131, Cl. 101-4.000.

Laurent, Bernard: *See—*
Epenoy, Gabriel I.; Kuhne, Roland; Laurent, Bernard; and Thirion, Philippe E., 4,202,039, Cl. 364-757.000.

Law, Richard S.: *See—*
Charbonneau, Jack W.; Law, Richard S.; Ludwig, Willis J.; and Otteson, Wayne O., 4,201,404, Cl. 282-27.500.

Lawrence, Alan J.; Cotton, John M.; Hamer-Hodges, Kenneth J.; and Denenberg, Jeffrey N., to International Telephone and Telegraph. Distributed control digital switching system. 4,201,889, Cl. 320-68.000.

Lawrence, Alan J.; Denenberg, Jeffrey N.; Rubinstein, Murray; and Upp, Daniel C., to International Telephone and Telegraph. Multiport digital switching element. 4,201,890, Cl. 370-68.000.

Lawrence, Alan J.; Cotton, John M.; and Denenberg, Jeffrey N., to International Telephone and Telegraph Corporation. Expandable digital switching network. 4,201,891, Cl. 370-58.000.

Lawrence, Derek I., to Westland Aircraft Limited. Load-supporting structures. 4,200,946, Cl. 14-4.000.

Layne, Daniel T.: *See—*
Sasiela, Ronald J.; and Layne, Daniel T., 4,201,484, Cl. 366-153.000.

Leaf, Roger L.: *See—*
Brown, Richard I.; and Leaf, Roger L., 4,201,525, Cl. 417-477.000.

Le Berre, Serge: *See—*
Hareng, Michel; and Le Berre, Serge, 4,202,010, Cl. 358-56.000.

Le Cardonnel, Gerard, to Thomson-CSF. A circuit for protecting an electronic exchange against overloads. 4,202,025, Cl. 361-103.000.

Leclercq, Marius F.: *See—*
Gerbet, Roger G.; Leroux, Jean-Claude; Morin, Daniel L.; and Leclercq, Marius F., 4,201,381, Cl. 273-73.00F.

Lederer, Edgar: *See—*
Ciorbaru nee Sfartz, Rita; Bona, Constantin; Chedid, Louis; Lederer, Edgar; and Petit, Jean-Francois, 4,201,768, Cl. 424-92.000.

Lee, Edward C.; and Natarajan, Thillaigovindan, to Texas Instruments Incorporated. Multiprobe contact monitor and control system. 4,201,939, Cl. 324-158.00P.

Lee, James K.: *See—*
Thomas, Harold T.; Howe, Dennis G.; and Lee, James K., 4,201,581, Cl. 430-396.000.

Lee, Kyu T., to Du Pont de Nemours, E. I., and Company. Herbicidal pyridine, 1-oxides. 4,201,567, Cl. 71-94.000.

Lee, Siu K.: *See—*
Popoff, Paul M.; Lee, Siu K.; and Touchton, James J., 4,202,019, Cl. 360-51.000.

Leeper, Harold M.: *See—*
Buckles, Richard G.; and Leeper, Harold M., 4,201,207, Cl. 128-214.00F.

Lees, Philip: *See—*
De Negris, Michael A.; and Lees, Philip, 4,201,046, Cl. 60-39.370.

Legendre, Michel; and Engelhard, Philippe, to Compagnie Francaise de Raffinage. Hydrocarbon isomerization catalysts and procedures for the preparation thereof. 4,201,696, Cl. 252-442.000.

Lehmann, Hans: *See—*
Zondler, Helmut; and Lehmann, Hans, 4,201,854, Cl. 528-121.000.

LEK Tovarna Farmacevtskih in Kemicnih Izdelkov, n.sol.o.: *See—*
Zupancic, Boris, 4,201,870, Cl. 562-460.000.

Le Page, Jean-Francois: *See—*
Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, 4,201,661, Cl. 208-139.000.

Lerner, Bernard; and Liebhart, Dana J., to Automated Packaging Systems, Inc. Method and apparatus for packaging. 4,201,029, Cl. 53-429.000.

Lerner, Harold: *See—*
Musto, Dominick J.; and Lerner, Harold, 4,201,476, Cl. 356-386.000.

Leroux, Jean-Claude: *See—*
Gerbet, Roger G.; Leroux, Jean-Claude; Morin, Daniel L.; and Leclercq, Marius F., 4,201,381, Cl. 273-73.00F.

LeTourneau, Thomas R. Adjustable pant leg system. 4,200,938, Cl. 2-269.000.

Levaillant, Claude: *See—*
Tronc, Dominique; and Levaillant, Claude, 4,201,920, Cl. 250-492.00B.

LeVeen, Harry H.; and LeVeen, Robert F. Molded hypodermic plunger with integral shaft and elastomeric head. 4,201,209, Cl. 128-218.00P.

LeVeen, Robert F.: *See—*
LeVeen, Harry H.; and LeVeen, Robert F., 4,201,209, Cl. 128-218.00P.

Lever Brothers Company: *See—*
Augustijn, Govert J. P., 4,201,686, Cl. 252-174.220.

Levi Strauss & Co.: *See—*
Blessing, Hubert, 4,201,145, Cl. 112-306.000.

Levichev, Pavel A.: *See—*
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P., 4,201,075, Cl. 72-204.000.

Levinson, Steven R.; and Adin, Anthony, to Eastman Kodak Company. Heat sensitive reactive products of hexaarylbiimidazole and antihalation dyes. 4,201,590, Cl. 430-617.000.

Lewin, Helmut: *See—*
Schoettle, Klaus; Uhl, Karl; Wittkamp, Heinrich; Dobler, Peter; and Lewin, Helmut, 4,201,356, Cl. 242-197.000.

Lewinger, Olga. Non-tobacco containing smoking product. 4,201,228, Cl. 131-2.000.

Lewis, Adolph L., to United States of America, Navy. Apparatus for curing adhesively joined fiber optic elements. 4,201,618, Cl. 156-380.000.

Lewis, David F.: *See—*
Lyshkow, Norman A.; and Lewis, David F., 4,201,551, Cl. 44-1.00D.

Lewis, F. Michael: *See—*
Marynowski, Chester W.; Lewis, F. Michael; Lapple, Charles E.; Murray, Robert G.; and Semrau, Konrad T., 4,201,512, Cl. 415-90.000.

Lewis, Wayne J.; and Ward, William P., to NCR Corporation. Data processing system having error detection and correction circuits. 4,201,337, Cl. 235-303.200.

Lexel Corporation: *See—*
Mohler, Galen E., 4,201,951, Cl. 331-94.50D.

Leybold-Hereaus GmbH & Co. KG: *See—*
Schunk, Gunter; and Randow, Albert, 4,201,915, Cl. 250-343.000.

Liang, Anthony, to GTE Sylvania Incorporated. Precious metal nitrogenous organo reaction products. 4,201,719, Cl. 260-429.00R.

Liao, Hsiang P., to FMC Corporation. Process for removing arsenic from aqueous mediums. 4,201,667, Cl. 210-50.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Klank, Otto, 4,201,943, Cl. 455-185.000.

Lichaa, Albert: *See—*
Bennett, Richard N.; and Lichaa, Albert, 4,201,251, Cl. 141-284.000.

Lichte, Leo J., to Toro Company, The. Shiftable stator sprinkler head. 4,201,344, Cl. 239-242.000.

Lidaka, Marger J.: *See—*
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.

Liebhart, Dana J.: *See—*
Lerner, Bernard; and Liebhart, Dana J., 4,201,029, Cl. 53-429.000.

Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., to International Flavors & Fragrances Inc. Processes for preparing cyclohexadiene derivatives. 4,201,639, Cl. 204-158.00R.

Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Perfumery uses of oxyhydrocarbylnorbornane derivatives. 4,201,697, Cl. 252-522.00R.

Likholai, Vasily K.; and Tjunkin, Boris A., to Pechorsky Gosudarstvenny Naucnno-Issledovalelsley I Proerthy Institut "Pechornipineft". Method of oil recovery by thermal mining. 4,201,420, Cl. 299-2.000.

Lindauer Dornier Gesellschaft mbH: *See—*
Delaplace, Philippe; and Bernard, Pierre, 4,201,248, Cl. 139-21.000.

Lindmayer, Joseph, to Solarex Corporation. Method of applying an antireflective coating to a solar cell. 4,201,798, Cl. 427-74.000.

Lindsay, Jacque K.: *See—*
Groet, Nicholas H.; and Lindsay, Jacque K., 4,201,841, Cl. 430-567.000.

Lindstrom, Harold R.: *See—*
Bigbee, Marvin L.; Lindstrom, Harold R.; and Ryan, Edward C., 4,201,348, Cl. 241-101.00B.

Linkman Building Company Limited: *See—*
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Lipha Lyonnaise Industrielle Pharmaceutique: *See—*
Briet, Philippe; Berthelon, Jean-Jacques; and Depin, Jean-Claude, 4,201,783, Cl. 424-256.000.

Lipinski, Henry F.; and Wantling, Steven J., to Exxon Research & Engineering Co. Metalworking corrosion inhibition/drawing lubricant. 4,201,681, Cl. 252-33.200.

Lippler, Remy R.: *See—*
Passagne, Claude G.; Lippler, Remy R.; Senet, Jean-Pierre G.; and Plazanet, Jacques, 4,201,720, Cl. 260-463.000.

Little, Eric A.: *See—*
Schwartzburg, James H.; Little, Eric A.; and Wilson, Eddie A., 4,201,360, Cl. 249-140.000.

Livaudais, Frank B., Jr.; and Spiselman, Joseph W., to Livaudais, Frank B., Jr. Pesticide powders, their use and preparation. 4,201,791, Cl. 424-358.000.

Livaudais, Frank B., Jr: *See—*
Livaudais, Frank B., Jr.; and Spiselman, Joseph W., 4,201,791, Cl. 424-358.000.

Lo, Grace Y-S.: *See—*
Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., 4,201,729, Cl. 260-665.00R.

Lockheed Corporation: *See—*
Lafitte, George A., Jr., 4,201,024, Cl. 52-394.000.

Lockyer, John, to Deutsch Relays, Inc. Mounting arrangement for electrical plug-in components. 4,201,437, Cl. 339-121.000.

Lodal, Inc.: *See—*
Brisson, John R., 4,201,508, Cl. 414-525.00R.

Logan, Francis D.: *See—*
Thomason, James M.; and Logan, Francis D., 4,201,265, Cl. 166-117.500.

Logan, James D., to Metriguard, Inc. Ultrasonic sheet material testing apparatus. 4,201,093, Cl. 73-618.000.

Lombardi, Louis J.; and Coyne, Roy J., to Richardson Company, The. Radiation curable solvent-free compositions. 4,201,842, Cl. 430-281.000.

Lonati, Francesco, to Costruzioni Meccaniche Lonati S.p.A. Safety device in a circular knitting machine. 4,201,067, Cl. 66-222.000.

Long, Alton W.: *See—*
Hofmann, William E.; and Long, Alton W., 4,201,562, Cl. 65-60.00B.

Longo, John M.: *See—*
Savage, David W.; Chang, Chin H.; and Longo, John M., 4,201,665, Cl. 210-32.000.

Loopco Industries, Inc.: *See—*
Madachy, John F., 4,201,352, Cl. 242-56.200.

L'Oreal: *See—*
Grollier, Jean-Francois; and Fourcadier, Chantal, 4,201,766, Cl. 424-70.000.

Lothrop, John W.: *See—*
Stewart, Charles C.; Avidor, Joel M.; Pugh, Evan R.; and Lothrop, John W., 4,201,952, Cl. 331-94.50D.

Louderback, Allan L., to Beckman Instruments, Inc. Method for increasing shelf-life of a serum bilirubin reference composition and composition produced thereby. 4,201,694, Cl. 252-408.000.

Lovgren, Jeffrey L.; and Quinlan, William P., to International Business Machines Corporation. Magnetic head load control system. 4,202,020, Cl. 360-75.000.

Lowry, Jerry D.: *See—*
Matejec, John K.; Lowry, Jerry D.; and Fulbright, Gene R. N., 4,201,395, Cl. 280-11.37M.

Lucas Industries Limited: *See—*
Fenne, Ivor, 4,201,160, Cl. 123-32.00G.

Luddington, Eric A.: *See—*
Hinchcliffe, Dennis; Heybourn, Frank; and Luddington, Eric A., 4,201,507, Cl. 414-331.000.

Ludwig, Willis J.: *See—*
Charbonneau, Jack W.; Law, Richard S.; Ludwig, Willis J.; and Otteson, Wayne O., 4,201,404, Cl. 282-27.500.

Luginbuhl, Otto: *See—*
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Luiten, Cornelis H.; and Gohring, Werner, to Ipsen Industries International GmbH. Method for the gas carburization of workpieces made of steel. 4,201,600, Cl. 148-16.500.

Lupinski, John H., to General Electric Company. Bonded amorphous metal electromagnetic components. 4,201,837, Cl. 428-457.000.

Luscher, Paul E., to Varian Associates, Inc. Transfer and temperature monitoring apparatus. 4,201,152, Cl. 118-712.000.

Lustgarten, George, to Sulzer Brothers Limited. Radial bearing for an internal combustion engine. 4,201,176, Cl. 123-196.00M.

Lyashenko, Jury P.: *See—*
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P., 4,201,075, Cl. 72-204.000.

Lynch, Henry W.: *See—*
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Lyons, James E.; Schneider, Abraham; and Myers, Harry K., Jr., to Sun Oil Company of Pennsylvania. Catalytic codimerization of norbornadiene with pentadiene. 4,201,731, Cl. 585-361.000.

Lyons, Nicholas L.: *See—*
Gilbert, John F.; and Lyons, Nicholas L., 4,201,814, Cl. 428-107.000.

Lyshkow, Norman A.; and Lewis, David F., to Combustion Equipment Associates, Inc. Embrittlement additive for treating organic materials. 4,201,551, Cl. 44-1.00D.

M.M.G., Inc.: *See—*
Ullman, Myron E., Jr., 4,200,956, Cl. 16-130.000.

M & W Gear Company: *See—*
Bonomo, Melvin E., 4,201,081, Cl. 73-141.00R.

MacDonald, J. G. Fraser, to Warner Electric Brake & Clutch Company. Electromagnetic clutch having a contractible friction shoe. 4,201,281, Cl. 192-35.000.

MacEwen, George E., to Phillips Petroleum Company. Container and sidewall blank therefor. 4,201,328, Cl. 229-4.500.

MacGregor, John J., to Matthey Rustenburg Refiners (Pty) Limited. Electrochemical destruction of stable complexes. 4,201,636, Cl. 204-109.000.

Machi, Shinji: *See—*
Manabe, Takao; Matunaga, Shigetugu; and Machi, Shinji, 4,201,144, Cl. 112-121.120.

Maciag, Edmund D., to Elixir Industries. Snap door vent. 4,201,122, Cl. 98-2.140.

Maciag, Edmund D.; and Frymire, Garold D., to Elixir Industries. Snap door vent with spring. 4,201,123, Cl. 98-2.140.

Mack, Frank J.; and Ronayne, Walter M., to American Home Products Corporation. Primary package for a space air treating device. 4,201,289, Cl. 206-0.500.

Mackert, Klaus: *See—*
Wirth, Alfred; Reimer, Hans; Mackert, Klaus; Diehl, Franz; and Splett, Klaus, 4,201,246, Cl. 138-30.000.

Macrina, Anthony J.: *See—*
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Madachy, John F., to Loopco Industries, Inc. Method and combination for winding strands of web material having varying thicknesses on a take-up drum. 4,201,352, Cl. 242-56.200.

Madarasz, Miklos: *See—*
Genovese, David L.; and Madarasz, Miklos, 4,201,436, Cl. 339-96.000.

Madden, Henry L. Carrying case for herbs and medicine. 4,201,290, Cl. 206-38.000.

Maeda, Yoshio, to Hitachi, Ltd. Apparatus for converting light signals into digital electrical signals. 4,201,472, Cl. 356-226.000.

Magerl, Richard A.; Dykas, George E.; and Hamilton, Kenneth W., to Motorola, Inc. Addressing circuitry for a vertical scan dot matrix display apparatus. 4,201,983, Cl. 340-709.000.

Magne, Pierre: *See—*
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Mahaffy & Harder Engineering Co.: *See—*
Mahaffy, Reid A.; and Mainberger, Walter A., 4,201,030, Cl. 53-432.000.

Mahaffy, Reid A.; and Mainberger, Walter A., to Mahaffy & Harder Engineering Co. Packaging apparatus and techniques for forming closure tops. 4,201,030, Cl. 53-432.000.

Maier, Elmar; and Heeb, Othmar, to Hilti Aktiengesellschaft. Arrangement for transporting a magazine through a setting device. 4,201,324, Cl. 227-9.000.

Mailliet, Pierre: *See—*
Ulveling, Leon; Mailliet, Pierre; and Metz, Jean, 4,201,373, Cl. 266-271.000.

Mainberger, Walter A.: *See—*
Mahaffy, Reid A.; and Mainberger, Walter A., 4,201,030, Cl. 53-432.000.

Makinson, Charles L., to Goodyear Tire & Rubber Company, The. Method of making tires. 4,201,744, Cl. 264-250.000.

Makita, Kunio: *See—*
Hattori, Tadashi; Nishida, Minoru; Ueno, Yoshiki; Makita, Kunio; and Kurii, Masaaki, 4,201,163, Cl. 123-117.00R.

Maklad, Mokhtar S.; and Pureza, Pablo C., to International Telephone and Telegraph Corporation. Apparatus and methods of coating filaments with polymers. 4,201,151, Cl. 118-642.000.

Malec, Robert E., to Ethyl Corporation. Lubricant composition of improved friction reducing properties. 4,201,684, Cl. 252-47.500.

Malloy, Frank H. Oil collection receptacle. 4,201,307, Cl. 220-62.000.

Maloney, Michael J. Gas pump lever blocking member. 4,201,253, Cl. 141-392.000.

Manabe, Takao; Matunaga, Shigetugu; and Machi, Shinji, to Toshiba Kikai Kabushiki Kaisha. Control systems for automatic sewing machines. 4,201,144, Cl. 112-121.120.

Mangood Corporation: *See—*
Johnson, Bernard A.; and Gardner, Frederick P., 4,201,908, Cl. 235-92.0TC.

Marans, Nelson S.: *See—*
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Marchesani, Cesare N.: *See—*
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Marchev, George B., to Gordos Corporation. Snap action tilt actuated mercury switch. 4,201,900, Cl. 200-220.000.

Marcus, Herbert. Display device. 4,201,975, Cl. 340-84.000.

Mare Corporation: *See—*
Ciavatta, Vitale G., 4,201,235, Cl. 132-7.000.

Maremont Corporation: *See—*
Paterick, Robert J., 4,201,407, Cl. 285-304.000.

Maresch, Gerald: *See—*
Kirsch, Kurt; Hilzensauer, Volkmar; Pflug, Gunther; Wehrmann, Felix; and Maresch, Gerald, 4,201,833, Cl. 428-404.000.

Margolis, Jack S.; McCleese, Daniel J.; Shumate, Michael S.; and Seaman, Clay H., to California Institute of Technology. Method and apparatus for Doppler frequency modulation of radiation. 4,201,468, Cl. 356-28.500.

Marion, Roland M., to General Electric Company. Numerical display using plural light sources and having a reduced and substantially constant current requirement. 4,201,039, Cl. 368-241.000.

Mark Telephone Products, Inc.: *See*—
Worcester, Leslie, 4,201,079, Cl. 73-40.50R.
Mark, Victor; Mitchell, Lawrence C.; and Hedges, Charles V., to General Electric Company. Process for producing bisphenols. 4,201,878, Cl. 568-723.000.
Markus, Attila L.: *See*—
Vadasz, Peter; Tokes, Szabolcs; Markus, Attila L.; Balazs, Karoly; Polya, Endre; Taller, Andras; and Podmaniczky, Andras, 4,201,455, Cl. 350-358.000.
Marquis, Edgar E., to Robertshaw Controls Company. Method of making electrical switch construction. 4,200,974, Cl. 29-622.000.
Marsch, Jack T. Production of hardbutter. 4,201,718, Cl. 260-409.000.
Marshall, Harry L. Remote control vehicle. 4,201,012, Cl. 46-256.000.
Martin, Benjamin, to Drum Engineering Company Limited, The. Check valves. 4,201,243, Cl. 137-510.000.
Martin, Eugene C.: *See*—
Henry, Ronald A.; and Martin, Eugene C., 4,201,853, Cl. 528-85.000.
Martin, Robert J., to Cessna Aircraft Company, The. Electro-hydraulic proportional control servo valve. 4,201,116, Cl. 91-387.000.
Martin, Terence A., to Ford Motor Company. Air hydraulic brake actuator. 4,201,057, Cl. 60-593.000.
Martinez, George, Jr. Method and apparatus for conserving energy in an air conditioning system. 4,201,062, Cl. 62-117.000.
Martinez, George, Jr. Method and apparatus for conserving energy in an air conditioning system. 4,201,063, Cl. 62-117.000.
Marvel Metal Products Company: *See*—
Johnson, Frank S., 4,201,428, Cl. 312-257.00R.
Marynowski, Chester W.; Lewis, F. Michael; Lapple, Charles E.; Murray, Robert G.; and Semrau, Konrad T., to Cerla N.V. Radially staged drag turbine. 4,201,512, Cl. 415-90.000.
Mascheroni, Alberto: *See*—
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Maschinenfabrik Peter Zimmer Aktiengesellschaft: *See*—
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Maschmeyer, Dennis G.: *See*—
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Masegi, Koichi: *See*—
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Masiello, Felix R.; and Kula, John S., to AM International, Inc. Reloadable paper dispenser. 4,201,354, Cl. 242-71.700.
Massachusetts Institute of Technology: *See*—
Kaplow, Roy; and Molnar, Michael K., 4,202,041, Cl. 364-900.000.
Ozaki, Yoshisuke, 4,201,671, Cl. 210-138.000.
Mast, William C.; and Bauer, Richard G., to Goodyear Tire & Rubber Company, The. Metal plated thermoplastic articles. 4,201,829, Cl. 428-332.000.
Matejec, John K.; Lowry, Jerry D.; and Fulbright, Gene R. N., to Vanguard Manufacturing, Inc. Roller skate shoe toe guard. 4,201,395, Cl. 280-11.37M.
Matousek, Jaroslav P.; and Smythe, Lloyd E., to Unisearch Limited. Aerosol deposition in furnace atomization. 4,201,469, Cl. 356-36.000.
Matson, Wayne R., to Environmental Sciences Associates, Inc. Apparatus for stripping voltammetry. 4,201,646, Cl. 204-195.00H.
Matsuda, Akira: *See*—
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Matsumoto, Masakazu; Yokono, Koujiro; Tanaka, Takashi; Toganou, Shigeo; Kishi, Hiroyoshi; and Nishide, Katsuhiko, to Canon Kabushiki Kaisha. Hologram and method of production thereof. 4,201,441, Cl. 350-3.610.
Matsushita Electric Industrial Co., Ltd.: *See*—
Hirashima, Masayoshi, 4,202,012, Cl. 358-147.000.
Kimura, Takeji; Takemoto, Toyoki; Inoue, Michihiro; and Sato, Masaharu, 4,201,106, Cl. 84-1.090.
Mattei, Frank V., to Ethicon, Inc. Absorbable coating composition for sutures. 4,201,216, Cl. 128-335.500.
Mattel, Inc.: *See*—
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Matthey Rustenburg Refiners (Pty) Limited: *See*—
MacGregor, John J., 4,201,636, Cl. 204-109.000.
Matthias, Jan H., to Steyr-Daimler-Puch Aktiengesellschaft. Steering head for bicycles. 4,201,397, Cl. 280-280.000.
Matthys, Pierre, to Etablissements Matthys and Societe G.A.R.A.P. Machine for charging furnaces. 4,201,129, Cl. 100-233.000.
Mattsson, Bertil; and Nilsson, Jan, to ASEA Aktiebolag. Mandrel for high pressure tube extrusion press. 4,201,071, Cl. 72-60.000.
Matunaga, Shigetugu: *See*—
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Maxey, David V.: *See*—
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May & Baker Limited: *See*—
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May, Bronislav H., to Monsanto Europe S.A. Scale inhibitors. 4,201,688, Cl. 252-180.000.
Mayer, Dieter: *See*—
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McCabe, Francis J. Telescoping heat responsive releasing means. 4,200,954, Cl. 16-48.500.
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Elkin, B. Jack, 4,201,347, Cl. 241-92.000.
McCartney, Ronald L.; Arnold, Bruce K.; and Hogan, Vaughn C., to International Telephone and Telegraph Corporation. Single optical fiber connector. 4,201,444, Cl. 350-96.210.
McCleese, Daniel J.: *See*—
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McCorkle, Dennis L.: *See*—
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McCorkle, Richard A., to International Business Machines Corporation. Electron beam-capillary plasma flash x-ray device. 4,201,921, Cl. 250-493.000.
McCormick, Willard L.: *See*—
Crossett, E. S.; and McCormick, Willard L., 4,201,215, Cl. 128-335.000.
McDonald, Ronald T. Universal adaptable three-prong electrical plug. 4,201,431, Cl. 339-14.00P.
McDonnell Douglas Corporation: *See*—
Lane, John H., 4,202,035, Cl. 364-200.000.
McFadyen, Robert J., to General Electric Company. AM-FM Detector circuit stabilized against fabrication and temperature variations. 4,201,946, Cl. 329-2.000.
McFadyen, Robert J.: *See*—
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McGraw-Edison Company: *See*—
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Irelan, Edward A.; Bartlett, Robert L.; and Walch, John W., 4,200,978, Cl. 30-276.000.
McKenna, John F., Jr.: *See*—
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,034, Cl. 364-420.000.
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,036, Cl. 364-420.000.
McLaughlin, Donald W., to GTE Automatic Electric Laboratories Incorporated. Private automatic branch exchange telephone system with two data sources sharing a multiplexed data bus. 4,201,893, Cl. 370-58.000.
McLaughlin, Donald W., to GTE Automatic Electric Laboratories Incorporated. Arrangement for conversion of random to fixed data channel format. 4,201,894, Cl. 370-58.000.
McMahon, Donald H.; and Soref, Richard A., to Sperry Corporation. Liquid crystal switching coupler matrix. 4,201,442, Cl. 350-96.140.
Mead Corporation, The: *See*—
Calvert, Rodney K.; and Fishback, Alton J., 4,201,118, Cl. 93-39.00R.
Suttles, James M., 4,201,139, Cl. 108-109.000.
Medical Engineering Corp.: *See*—
Finney, Roy P.; and Lynch, Henry W., 4,201,202, Cl. 128-79.000.
Mednikarov, Vladimir S.: *See*—
Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., 4,201,340, Cl. 239-66.000.
Meek, Nigel W.; Robb, John; and Munro, James A. Disc mowers. 4,201,033, Cl. 56-13.600.
Mego Corp.: *See*—
Abrams, D. David, 4,201,010, Cl. 46-12.000.
Meier, Bruno; and Luginbuhl, Otto, to Schweizerische Lokomotiv-und Maschinenfabrik. Hydraulic actuation system for a rail vehicle. 4,201,277, Cl. 188-196.00D.
Meier, Jacques, to Ferag AG. Apparatus for the individual conveying of printed products arriving in an imbricated product stream. 4,201,286, Cl. 198-461.000.
Meier, Karl, to Steyr-Daimler-Puch Aktiengesellschaft. Device for keeping a crash helmet on a two-wheeled motorcycle. 4,201,398, Cl. 280-289.00L.
Meirena, Dainuvite V.: *See*—
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.
Melehan, George, to Chippewa Paper Products Corporation. Apparatus for applying end caps to rolls of sheet stock. 4,201,028, Cl. 53-137.000.

Mellor, Leslie, to Edgar Pickering (Blackburn) Ltd. Drying apparatus. 4,200,994, Cl. 34-158.000.
Mendoza, Quinciano G.: *See—*
Douglas, Orva H.; and Mendoza, Quinciano G., 4,201,922, Cl. 290-38.00R.
Menlove, Howard O.: *See—*
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Merck & Co., Inc.: *See—*
Fullerton, Wardle; and Wolanski, Bohdan, 4,201,767, Cl. 424-89.000.
Mrozik, Helmut H.; Fisher, Michael H.; and Kulsa, Peter, 4,201,861, Cl. 536-17.00A.
Onishi, Janet C.; Rowin, Gerald L.; and Miller, John E., Jr., 4,201,771, Cl. 424-177.000.
Messerschmitt-Boikow-Blohm GmbH: *See—*
Derschmidt, Hans; and Sahlstorfer, Hermann, 4,201,515, Cl. 416-134.00A.
Nikowitsch, Peter, 4,201,135, Cl. 102-56.0SC.
Weiland, Emil; Schindler, Rudolf; and Brunsch, Klaus, 4,201,815, Cl. 428-113.000.
Messier, Francis L.: *See—*
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Meszaros, Csilla: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szaboles; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,201,723, Cl. 260-570.0AB.
Metallwerk Max Brose GmbH: *See—*
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Metriguard, Inc.: *See—*
Logan, James D., 4,201,093, Cl. 73-618.000.
Metz, Jean: *See—*
Ulveling, Leon; Mailliet, Pierre; and Metz, Jean, 4,201,373, Cl. 266-271.000.
Metzeler Schaum GmbH: *See—*
Patzelt, Heinrich; and Bokelmann, Horst, 4,201,321, Cl. 222-478.000.
Metzler, Richard B.: *See—*
Cully, Maryann; Pines, Arthur N.; Metzler, Richard B.; and Babian, Gunther W., 4,201,808, Cl. 428-40.000.
Michaels, Alan S.: *See—*
Chandrasekaran, Santosh K.; Darda, Siegfried; Michaels, Alan S.; and Cleary, Gary W., 4,201,211, Cl. 128-268.000.
Michassouridis, Athanasios, to Bayerische Motoren Werke Aktiengesellschaft. Control installation for the idling rotational speed of internal combustion engines. 4,201,169, Cl. 123-124.00R.
Midolo, Lawrence L. Integral hydraulic vehicle drive system. 4,201,272, Cl. 180-6.480.
Midrex Corporation: *See—*
Scarlett, John C.; and Beggs, Donald, 4,201,571, Cl. 75-35.000.
Miller, David H.: *See—*
Evans, Marvin; and Miller, David H., 4,201,370, Cl. 266-44.000.
Miller, John E., Jr.: *See—*
Onishi, Janet C.; Rowin, Gerald L.; and Miller, John E., Jr., 4,201,771, Cl. 424-177.000.
Miller, Maurice L.: *See—*
Depas, Laddie A., Sr., 4,201,422, Cl. 303-10.000.
Mills, Alfred L.; and Williams, John A., to United Kingdom Atomic Energy Authority. Processing of irradiated nuclear fuel. 4,201,690, Cl. 252-301.10W.
Mimura, Yoshinori: *See—*
Imamura, Nobutake; Mimura, Yoshinori; and Kobayashi, Toshihiko, 4,202,022, Cl. 360-114.000.
Minagawa, Yukinori; Kaneko, Tsugio; and Yamaguchi, Kunihiko, to Mitsubishi Chemical Industries Ltd. Method of separating yttrium ions. 4,201,747, Cl. 423-21.500.
Minamite, Yoshihiro: *See—*
Katsuda, Yoshio; and Minamite, Yoshihiro, 4,201,787, Cl. 424-304.000.
Mine Safety Appliances Company: *See—*
Wolf, Roger P., 4,201,119, Cl. 93-60.000.
Minnesota Mining and Manufacturing Company: *See—*
Charbonneau, Jack W.; Law, Richard S.; Ludwig, Willis J.; and Otteson, Wayne O., 4,201,404, Cl. 282-27.500.
Miquel, Jean: *See—*
Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, 4,201,661, Cl. 208-139.000.
Mirtain, Henri J.; Shichman, Daniel; and Neville, James J., to Uniroyal, Inc.; and Uniroyal a Societe Anonyme. Method for making a radial ply tire in a single building stage. 4,201,260, Cl. 152-361.0DM.
Mitchell, Lawrence C.: *See—*
Mark, Victor; Mitchell, Lawrence C.; and Hedges, Charles V., 4,201,878, Cl. 568-723.000.
Mitchell, O. Clayton: *See—*
Bethea, James W., III; Mitchell, O. Clayton; and Richards, George B., 4,201,225, Cl. 128-746.000.
Mitchell S.A.: *See—*
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Mitsubishi Chemical Industries Ltd.: *See—*
Kimura, Tsuneo; and Hashizume, Hiroshi, 4,201,872, Cl. 562-487.000.
Minagawa, Yukinori; Kaneko, Tsugio; and Yamaguchi, Kunihiko, 4,201,747, Cl. 423-21.500.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,201,863, Cl. 546-166.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Kimura, Masaharu; Otuki, Yoshiharu; Sugio, Akitoshi; and Furusawa, Tomotaka, 4,201,849, Cl. 525-401.000.
Mitsui Toatsu Chemicals Inc.: *See—*
Yamazaki, Noboru; Yuasa, Teruo; Morimoto, Yoshio; Aoi, Kunio; and Takase, Tsutomu, 4,201,877, Cl. 568-720.000.
Miura, Michiyori: *See—*
Noro, Yoshihiko; Hazama, Katashi; Yamada, Jun; Yanagihara, Hitoshi; and Miura, Michiyori, 4,201,964, Cl. 333-151.000.
Miyagawa, Tuyoshi; Kokubo, Eiichi; and Yoshida, Minoru, to Laurel Bank Machine Co., Ltd. Sealing device for use in a note counting machine. 4,201,131, Cl. 101-4.000.
Miyamoto, Norioki: *See—*
Inoue, Shigeo; and Miyamoto, Norioki, 4,201,844, Cl. 435-135.000.
Miyanohara, Isao; Miyazaki, Hiroshi; and Kawamura, Hideo, to Toyo Soda Manufacturing Co. Ltd. Treatment of sludge comprising biological aggregate. 4,201,668, Cl. 210-51.000.
Miyazaki, Hiroshi: *See—*
Miyanohara, Isao; Miyazaki, Hiroshi; and Kawamura, Hideo, 4,201,668, Cl. 210-51.000.
Mobil Oil Corporation: *See—*
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Mochizuki, Manabu: *See—*
Oyama, Hazime; Suzuki, Kohji; Mochizuki, Manabu; and Ohnuma, Teruyuki, 4,201,465, Cl. 355-15.000.
Modern Maid Food Products, Inc.: *See—*
Sasiela, Ronald J.; and Layne, Daniel T., 4,201,484, Cl. 366-153.000.
Modica, Giovanni: *See—*
Spaziante, Placido M.; Giuffre, Luigi; and Modica, Giovanni, 4,201,647, Cl. 204-195.00F.
Moench, Jerry D.: *See—*
Kung, Roger I.; and Moench, Jerry D., 4,202,045, Cl. 365-203.000.
Mohasco Corporation: *See—*
Gill, Glenn G.; and Cycowicz, Izchak, 4,200,941, Cl. 5-13.000.
Mohler, Galen E., to Lexel Corporation. Cascaded plasma tube ion laser having single resonator structure. 4,201,951, Cl. 331-94.50D.
Mohr, William C.; Busker, Leroy H.; Francik, Carl J.; and Bergstrom, Jan I., to Beloit Corporation. Extended nip press. 4,201,624, Cl. 162-205.000.
Molins Limited: *See—*
Hinchcliffe, Dennis; Heybourn, Frank; and Luddington, Eric A., 4,201,507, Cl. 414-331.000.
Molnar, Michael K.: *See—*
Kaplow, Roy; and Molnar, Michael K., 4,202,041, Cl. 364-900.000.
Monbaliu, Marcel J.; and Van Poucke, Raphael K., to AGFA-GEVAERT N.V. Silver halide elements containing yellow forming color couplers for silver halide photography. 4,201,584, Cl. 430-389.000.
Monsanto Company: *See—*
Burd, John W.; Stone, Bobbie D.; Tucker, William F.; and Gupta, Kedar P., 4,201,746, Cl. 422-250.000.
Crutchfield, Marvin M.; Langguth, Robert P.; and Mayer, James M., 4,201,687, Cl. 252-102.000.
Crutchfield, Marvin M.; and Upton, Charles J., 4,201,858, Cl. 528-232.000.
Feder, Joseph; Ku, Katharine; and Ku, Mau-Jung, 4,201,845, Cl. 435-285.000.
Monsanto Europe S.A.: *See—*
May, Bronislav H., 4,201,688, Cl. 252-180.000.
Montell, Joseph J., to Rug Crafters. Rug and method of making the same. 4,201,811, Cl. 428-92.000.
Monthony, James F.; Burgett, Michael W.; and Dahlstrom, Robert V., to Bio-Rad Laboratories, Inc. Solid phase immunofluorescent assay method. 4,201,763, Cl. 424-8.000.
Mookherjee, Braja D.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.
Moore Business Forms, Inc.: *See—*
Wooten, Richard L., 4,201,332, Cl. 229-92.000.
Morana, Luis. Combination lock. 4,201,068, Cl. 70-310.000.
Morawski, London T. Collet chuck. 4,201,394, Cl. 279-2.00R.
Morcom, Paul J. Plastic collapsible article carrier. 4,201,295, Cl. 206-174.000.
Morefield, Joe. Hair treatment device. 4,201,236, Cl. 132-40.000.
Morez, Gene, to Troller Corporation. Power control circuit. 4,202,032, Cl. 363-126.000.
Morgan, Homer R. Tailgate construction. 4,201,411, Cl. 296-50.000.
Morgan, J. Randolph: *See—*
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Morgan, James W.: *See—*
Fredin, Ell C.; Morgan, James W.; and Waimer, Milo H., 4,200,943, Cl. 7-100.000.
Morgans, Trevor. Restoration and protection of cutting surfaces. 4,201,599, Cl. 148-6.14R.
Morimoto, Yoshio: *See—*
Yamazaki, Noboru; Yuasa, Teruo; Morimoto, Yoshio; Aoi, Kunio; and Takase, Tsutomu, 4,201,877, Cl. 568-720.000.
Morin, Daniel L.: *See—*
Gerbet, Roger G.; Leroux, Jean-Claude; Morin, Daniel L.; and Leclercq, Marius F., 4,201,381, Cl. 273-73.00F.

Morinaga, Masaru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Horizontal-type head form impact tester. 4,201,078, Cl. 73-12.000.
Morris, George V., to United States of America, Army. Safety control for electronic circuits. 4,201,136, Cl. 102-214.000.
Morris, John C.: *See*—
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Morrison, Ian D.: *See*—
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Morrison, Raymond C.; and Pratt, Albert R., to Raytheon Company. Spring lock knob assembly. 4,201,096, Cl. 74-531.000.
Morsbach, Martin: *See*—
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Moseley Rubber Co. Ltd., The: *See*—
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Mossbrugger, Horst G.: *See*—
Fyfe, Colin A.; Mossbrugger, Horst G.; and Yannoni, Costantino S., 4,201,941, Cl. 324-321.000.
Motorola, Inc.: *See*—
Bizzak, Frank W., 4,201,148, Cl. 116-241.000.
Kung, Roger I.; and Moench, Jerry D., 4,202,045, Cl. 365-203.000.
Magerl, Richard A.; Dykas, George E.; and Hamilton, Kenneth W., 4,201,983, Cl. 340-709.000.
Robinson, Frederick J.; and Tracy, Clarence J., 4,201,579, Cl. 430-323.000.
Skutta, Frank R.; and Tice, Lee D., 4,201,960, Cl. 333-17.00M.
Mott, Richard C., to Honeywell Inc. Dwell relay. 4,201,245, Cl. 137-624.110.
Mott, Richard C., to Honeywell Inc. Fluidic square root extractor. 4,201,336, Cl. 235-200.0WE.
Motz, Herbert: *See*—
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Mougin, Georges L., to ITI Limited. Method for rapidly melting an iceberg. 4,201,498, Cl. 405-303.000.
Mrozik, Helmut H.; Fisher, Michael H.; and Kulsa, Peter, to Merck & Co., Inc. Acyl derivatives of C-076 compounds. 4,201,861, Cl. 536-17.00A.
M'Sadoques, Andre J., to General Electric Company. Meter jaw and spring clip assembly. 4,201,439, Cl. 339-259.00R.
MTA Szamitastechnikai es Automatizalasi Kutato Intezet: *See*—
Vadasz, Peter; Tokes, Szabolcs; Markus, Attila L.; Balazs, Karoly; Polya, Endre; Taller, Andras; and Podmaniczky, Andras, 4,201,455, Cl. 350-358.000.
Mueller, Frederick N.; and Chandler, Ronald W., to Tetradyne Corporation. Apparatus for automatically sensing and recording data in a sewage system. 4,200,982, Cl. 33-126.600.
Mueller, Joseph F. Separating meat from shell. 4,200,961, Cl. 17-73.000.
Mueller, Martin: *See*—
Guyot, Volker; Maus, Otfrid; and Mueller, Martin, 4,201,091, Cl. 73-462.000.
Muller, Klaus, to BBC Brown Boveri & Company Limited. Method and apparatus for carrying out an electrolysis process. 4,201,635, Cl. 204-1.00R.
Muller, Rolf: *See*—
Jellinek, Karl; and Muller, Rolf, 4,201,835, Cl. 428-288.000.
Munro, James A.: *See*—
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Muntjanoff, John R., to Caterpillar Tractor Co. Automatic grapple control system. 4,201,510, Cl. 414-730.000.
Murata, Kazuo: *See*—
Gotoda, Masao; Okada, Toshio; Murata, Kazuo; and Takahashi, Kusuhiko, 4,201,641, Cl. 204-159.170.
Murphy, Wesley T., to E.T.I. Corporation. Structural member. 4,201,026, Cl. 52-731.000.
Murray, Robert G.: *See*—
Marynowski, Chester W.; Lewis, F. Michael; Lapple, Charles E.; Murray, Robert G.; and Semrau, Konrad T., 4,201,512, Cl. 415-90.000.
Murtha, Timothy P., to Phillips Petroleum Company. Separation of phenol, cyclohexanone-, and cyclohexylbenzene-containing mixtures employing a nitrile as extraction distillation solvent. 4,201,632, Cl. 203-51.000.
Muschelknautz, Edgar: *See*—
Imhauser, Gunter; Brauner, Dieter; and Muschelknautz, Edgar, 4,201,482, Cl. 366-98.000.
Musto, Dominick J.; and Lerner, Harold, to Austin Company, The. Laser dimension gauge. 4,201,476, Cl. 356-386.000.
Muths, Donald A.: *See*—
Cobb, Clyde E.; and Muths, Donald A., 4,201,114, Cl. 91-3.000.
Myers, Harry K., Jr.: *See*—
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Myles, Jack: *See*—
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Nace, George W., to University of Michigan, The Regents of the. Animal enclosure system. 4,201,153, Cl. 119-3.000.
Nagai, Hiroshi: *See*—
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Nagano, Hiroo; Fukuda, Takashi; Nagai, Hiroshi; and Nakamura, Yasuyuki, to Sumitomo Metal Industries, Ltd. Apparatus for continuous electrolytic descaling of steel wire with mill scales. 4,201,650, Cl. 204-209.000.
Nagase, Tetsuo; Watanabe, Hideo; and Inomata, Akira, to Pioneer Electronic Corporation. Front-loaded cassette tape deck. 4,202,021, Cl. 360-96.500.
Nagata, Wataru: *See*—
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Nagatomo, Shigeru: *See*—
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Nagel, Martin J., to Tenna Corporation. Plural concentric moving coil speaker with push-pull voltage follower direct coupling. 4,201,886, Cl. 179-1.00A.
Nagel, Peter: *See*—
Huebner, Werner; Hartmann, Job-Werner; Domas, Friedrich; Nagel, Peter; Deigner, Paul; Koester, Eberhard; and Hauser, Hans, 4,201,486, Cl. 366-196.000.
Naito, Ryoichi; Shiino, Satoru; and Inahara, Hirohisa, to Green Cross Corporation, The. Food additive for reinforcing foods deficient in fiber content. 4,201,776, Cl. 424-195.000.
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Takaaki; and Yamashita, Haruhiro, to Bristol-Myers Company. Purine derivatives. 4,201,860, Cl. 544-277.000.
Nakagawa, Susumu: *See*—
Naito, Takayuki; Nakagawa, Susumu; Yamasaki, Tetsuro; Okita, Taka-aki; and Yamashita, Haruhiro, 4,201,860, Cl. 544-277.000.
Nakahara, Keishi: *See*—
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Nakahara, Masaki: *See*—
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Nakajima, Mutsuo: *See*—
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, 4,201,769, Cl. 424-117.000.
Nakamura, Akio; and Sado, Ryoichi, to Shin-Etsu Polymer Co. Ltd. Interconnectors. 4,201,435, Cl. 339-59.00M.
Nakamura, Yasuyuki: *See*—
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Nakano, Yoshiyuki, to Nippon Kogaku K.K. Braking device for focal plane shutter. 4,201,459, Cl. 354-147.000.
Nakao, Masatane; and Ikuta, Yoshiji, to NTN Toyo Bearing Company. Apparatus for fixing metal clamp bands. 4,200,966, Cl. 29-243.500.
Nakauchi, Hiroshi: *See*—
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Nakayama, Yasuaki, to Citizen Watch Co., Ltd. Watch movement construction. 4,201,040, Cl. 368-35.000.
Nalco Chemical Co.: *See*—
Allain, Ronald J.; Braithwaite, David G.; and Reid, Ansell L., 4,201,758, Cl. 423-497.000.
Nalebuff, Donald J.: *See*—
Ali, Majid; and Nalebuff, Donald J., 4,201,221, Cl. 128-630.000.
Nally, Robert B., to NCR Canada Ltd. — NCR Canada Ltee. Document processing system. 4,201,978, Cl. 340-146.30C.
Nanjo, Hirotoshi; and Boyama, Kimihiro, to Kokusan Denki Co., Ltd. Ignition system for a multicylinder engine. 4,201,171, Cl. 123-148.0AC.
Nannen, William G. Thread reconditioning tool. 4,201,503, Cl. 408-215.000.
Narisada, Masayuki; and Nagata, Wataru, to Shionogi & Co., Ltd. Thiadiazolyl cephalosporin analogs. 4,201,782, Cl. 424-248.510.
Natarajan, Thillaigovindan: *See*—
Lee, Edward C.; and Natarajan, Thillaigovindan, 4,201,939, Cl. 324-158.00P.
Natens, Marcel C. R., to International Standard Electric Corporation. Phase-locked loop clock pulse extraction circuit. 4,201,948, Cl. 331-8.000.
National Instrument Co., Inc.: *See*—
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National Patent Development Corporation: *See*—
Sakaguchi, Shinji; Kubodera, Seiiti; Arakawa, Jun; Shiba, Keisuke; and Tsuji, Nobuo, 4,201,589, Cl. 430-139.000.
NCR Canada Ltd. — NCR Canada Ltee: *See*—
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NCR Corporation: *See*—
Koetsch, Philip W., 4,201,928, Cl. 307-270.000.
Lewis, Wayne J.; and Ward, William P., 4,201,337, Cl. 235-303.200.
Ward, William P., 4,202,046, Cl. 365-222.000.
Neat, Frank, to Foseco Trading AG. Refractory exothermic heating insulating articles. 4,201,606, Cl. 149-37.000.
Nelson, Jacob T. Dough dispensing and support apparatus. 4,201,358, Cl. 248-283.000.
Nelson, Stephen J., to Upjohn Company, The. Process for preparing N-[(phosphinyl)amino]thio- and N-[(phosphinyl)amino]thiomethylcarbamates. 4,201,733, Cl. 260-968.000.
Nesseth, Arthur E. Paint scraper. 4,200,948, Cl. 15-236.00R.
Neukomm, Serge, to Sasmoco, S.A. Filter for smoking article, mainly cigarette. 4,201,234, Cl. 131-265.000.

Neumann, Daniel L., to Dexter Corporation, The. Water-based container end sealing compositions and their use. 4,201,308, Cl. 220-81.00R.
Neumann, Manfred E., to Siemens-Allis, Inc. Voltage regulator which eliminates arcing during tap changes. 4,201,938, Cl. 323-43.50R.
Neville, James J.: *See*—
Mirtain, Henri J.; Shichman, Daniel; and Neville, James J., 4,201,260, Cl. 152-361.0DM.
New England Power Service Company: *See*—
Rowell, Robert L.; and Vasconcellos, Stephen R., 4,201,552, Cl. 44-51.000.
Newton, Joel A., to Sprague Electric Company. Treating pulp-and-paper mill streams. 4,201,666, Cl. 210-47.000.
Nichols, Philip T.: *See*—
Watts, Paul J.; Crawford, Lynn D.; and Nichols, Philip T., 4,201,237, Cl. 135-2.000.
Nicholson, Richard R.: *See*—
Shukla, Jayendra G.; Smith, Ray E.; and Nicholson, Richard R., 4,201,677, Cl. 252-8.100.
Sienkowski, Kenneth J.; Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,201,593, Cl. 106-18.140.
Niedecker, Herbert. U-shaped clip made from strip material. 4,200,962, Cl. 24-30.50W.
Niedermeyer, Karl O. Through flow sump pump. 4,201,519, Cl. 417-38.000.
Niiro, Yasuhiko; and Wakabayashi, Hiroharu, to Kokusai Denshin Denwa Co., Ltd. Automatic equalization system. 4,201,959, Cl. 333-16.000.
Nikowitsch, Peter, to Messerschmitt-Bolkow-Blohm GmbH. Hollow charge construction and range spacer therefor. 4,201,135, Cl. 102-56.0SC.
Nilsson, Jan: *See*—
Mattsson, Bertil; and Nilsson, Jan, 4,201,071, Cl. 72-60.000.
Ninneman, Lawrence D., to Owens-Illinois, Inc. Apparatus for forming tubular plastic articles. 4,201,535, Cl. 425-548.000.
Nippon Electric Co., Ltd.: *See*—
Koga, Toshio, 4,202,011, Cl. 358-136.000.
Ushiyama, Yasuichi; and Yamamoto, Setsuo, 4,202,009, Cl. 358-32.000.
Nippon Kogaku K.K.: *See*—
Fukino, Kunihiro, 4,201,461, Cl. 354-272.000.
Nakano, Yoshiyuki, 4,201,459, Cl. 354-147.000.
Nippon Paint Co., Ltd.: *See*—
Doi, Koichi; Kato, Hisao; and Kurauchi, Takeo, 4,201,592, Cl. 106-2.000.
Hori, Kiyoshi, 4,201,801, Cl. 427-274.000.
Nippon Soken, Inc.: *See*—
Akita, Sigeyuki; and Wakamatsu, Hisato, 4,201,087, Cl. 73-339.00A.
Hattori, Tadashi; Nishida, Minoru; Ueno, Yoshiki; Makita, Kunio; and Kurii, Masaaki, 4,201,163, Cl. 123-117.00R.
Inagaki, Mitsuo; Hattori, Yoshiyuki; and Taguchi, Masahiro, 4,201,930, Cl. 310-51.000.
Kawai, Hisasi; and Ina, Toshikazu, 4,201,159, Cl. 123-32.0EB.
Nippondenso Co., Ltd.: *See*—
Hattori, Tadashi; Nishida, Minoru; Ueno, Yoshiki; Makita, Kunio; and Kurii, Masaaki, 4,201,163, Cl. 123-117.00R.
Nishida, Minoru: *See*—
Hattori, Tadashi; Nishida, Minoru; Ueno, Yoshiki; Makita, Kunio; and Kurii, Masaaki, 4,201,163, Cl. 123-117.00R.
Nishide, Katsuhiko: *See*—
Matsumoto, Masakazu; Yokono, Koujiro; Tanaka, Takashi; Toganou, Shigeo; Kishi, Hiroyoshi; and Nishide, Katsuhiko, 4,201,441, Cl. 350-3.610.
Nishimi, Ichiro; and Ohira, Hideaki, to Kabushiki Kaisha Saginomiya Seisakusho. Electromagnetic pilot type valve. 4,201,362, Cl. 251-29.000.
Nishimura, Yutaka; and Oyama, Yoshishige, to Hitachi, Ltd. Air to fuel ratio control system for internal combustion engine. 4,201,166, Cl. 123-119.0EC.
Nissan Motor Company, Limited: *See*—
Iizuka, Haruhiko, 4,201,180, Cl. 123-198.00F.
Tanaka, Toshiaki; and Etoh, Yukihiro, 4,201,165, Cl. 123-119.00A.
Nissen, Norman C.: *See*—
Subramanian, Kojur N.; Nissen, Norman C.; and Thomas, John A., 4,201,648, Cl. 204-112.000.
Nissen, Reinhard, to Klockner-Humboldt-Deutz Aktiengesellschaft. Recovery of metal values from a solution by means of cementation. 4,201,573, Cl. 75-109.000.
Nisshin Steel Co., Ltd.: *See*—
Doi, Koichi; Kato, Hisao; and Kurauchi, Takeo, 4,201,592, Cl. 106-2.000.
Nitta, Tomio, to Tokai Seiki Co., Ltd. Fuel tank of a disposable cigarette gas lighter. 4,201,537, Cl. 431-344.000.
Nixel, Fritz, to Voith Turbo GmbH & Co., KG. Fluid coupling. 4,201,050, Cl. 60-357.000.
Noel, Eugene M. Non-clogging gravity transfer connector for closed containers. 4,201,252, Cl. 141-286.000.
Nofal, Abb A., to Combustion Engineering, Inc. Sulphur oxide removal from gas. 4,201,755, Cl. 423-242.000.
Nolan, John P. S., to John Nolan Design Limited. Winding machine. 4,201,035, Cl. 57-6.000.
Nolan, Thomas E., Jr., to Damon Corporation. Flexible shaft construction for a high inertia centrifuge. 4,201,066, Cl. 64-1.00V.
Nomura, Hideo: *See*—
Toyota, Akira; Nozawa, Katsumi; and Nomura, Hideo, 4,201,522, Cl. 417-311.000.
Nomura, Yukihiko: *See*—
Tanaka, Masami; and Nomura, Yukihiko, 4,201,969, Cl. 338-180.000.
Nordmann, Bernard J.: *See*—
Connors, John P.; Nordmann, Bernard J.; Wainland, David M.; and Bell, Henry P., 4,202,042, Cl. 364-900.000.
Noro, Yoshihiko; Hazama, Katashi; Yamada, Jun; Yanagihara, Hitoshi; and Miura, Michiyori, to Hitachi, Ltd. Elastic surface wave device. 4,201,964, Cl. 333-151.000.
Northern Telecom Limited: *See*—
Walling, Jorg-Hein; and Bouffard, Jean, 4,201,250, Cl. 141-250.000.
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc. Process and apparatus for the determination of the total organic substance content of gases by a flame ionization detector. 4,201,550, Cl. 23-232.00E.
Nowack, Gerhard P.: *See*—
Wu, Yulin; Johnson, Marvin M.; and Nowack, Gerhard P., 4,201,875, Cl. 568-575.000.
Nowak, Michael T., to Celanese Corporation. Radiation-curable coating composition having utility as a moisture barrier film. 4,201,642, Cl. 204-159.170.
Nozawa, Katsumi: *See*—
Toyota, Akira; Nozawa, Katsumi; and Nomura, Hideo, 4,201,522, Cl. 417-311.000.
NTN Toyo Bearing Company: *See*—
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N.V. Optische Industrie "De Oude Delft": *See*—
Houtkamp, Johannes J., 4,201,797, Cl. 427-66.000.
Nylander, Perry, to AB Syntes. Polymerizable unsaturated polyester compositions useful in the manufacture of multilayer laminates and laminates prepared therefrom. 4,201,826, Cl. 428-268.000.
Occidental Oil Shale, Inc.: *See*—
Hutchins, Ned M., 4,201,419, Cl. 299-2.000.
O'Connell, James R.: *See*—
Den Besten, Leroy E.; and O'Connell, James R., 4,201,421, Cl. 299-86.000.
O'Connell, William J. J.: *See*—
Hall, Walter L.; and O'Connell, William J. J., 4,201,832, Cl. 428-412.000.
Off, Joseph W. A.; and Early, Judson H., to Haggar Company. Method of manufacturing garments. 4,200,937, Cl. 2-227.000.
Ogawa, Hiroshi; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,201,809, Cl. 428-65.000.
Ogawa, Mototugu: *See*—
Okada, Takeshi; and Ogawa, Mototugu, 4,201,198, Cl. 128-4.000.
Ogles, Ethridge F. Oil well pump jack with dual hydraulic operating cylinders. 4,201,115, Cl. 91-218.000.
Ohama, Yasumichi, to Honda Giken Kogyo Kabushiki Kaisha. Intake manifold for engine. 4,201,168, Cl. 123-122.0AB.
O'Hara, James J. Portable pick-up device. 4,201,409, Cl. 294-1.0BA.
Ohgishi, Tsutomu; Akiyama, Toru; and Sakurai, Tadashi, to Sanyo Electric Co., Ltd. Phase comparing apparatus. 4,201,945, Cl. 455-183.000.
Ohio State University, The: *See*—
Stevens, Vernon C., 4,201,770, Cl. 424-177.000.
Ohira, Hideaki: *See*—
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Ohkubo, Kazuo: *See*—
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,201,863, Cl. 546-166.000.
Ohnishi, Takanori; Shiozawa, Ken; and Shimizu, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Kogyo Kabushiki Kaisha. Carburetor. 4,201,734, Cl. 261-34.00B.
Ohnuma, Teruyuki: *See*—
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Okabe, Itsuro: *See*—
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Okada, Takeshi; and Ogawa, Mototugu, to Olympus Optical Co., Ltd. Endoscope having a separable connection to a photographing device. 4,201,198, Cl. 128-4.000.
Okada, Tomoyuki; and Sugiura, Noboru, to Hitachi, Ltd. Ignition apparatus for multi-cylinder reciprocating internal combustion engine. 4,201,173, Cl. 123-148.00C.
Okada, Toshio: *See*—
Gotoda, Masao; Okada, Toshio; Murata, Kazuo; and Takahashi, Kusuhiko, 4,201,641, Cl. 204-159.170.
Okamoto, Rokuro; Fukumoto, Tsumoru; Takamatsu, Akira; and Takeuchi, Tomio, to Sanraku Ocean Co., Ltd. Process for manufacturing tylosin derivatives. 4,201,843, Cl. 435-76.000.
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, to Mitsubishi Chemical Industries, Limited; and Okamoto, Shosuke. N^2-Arylsulfonyl-L-argininamides and the pharmaceutically acceptable salts thereof. 4,201,863, Cl. 546-166.000.
Okamura, Masahiro: *See*—
Tanaka, Tomoyuki; Shirasawa, Toshikatsu; and Okamura, Masahiro, 4,201,598, Cl. 148-1.500.
Okita, Taka-aki: *See*—
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Okumura, Hiroshi: *See*—
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Olah, George A., to Produits Chimiques Ugine Kuhlmann. Hydrocarbon conversions using solid superacid catalysts based on fluorinated graphite. 4,201,730, Cl. 585-730.000.
Olah, Karoly: *See*—
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.
Olin Corporation: *See*—
Gasper, Kenneth E., 4,201,867, Cl. 560-205.000.
Saeman, Walter C.; Coe, Noel N.; and Faust, John P., 4,201,756, Cl. 423-266.000.
Olivieri, Anthony; and Macrina, Anthony J. Method and apparatus involving adhesive backed photographs. 4,201,613, Cl. 156-270.000.
Olofsson, Bjorn O. E. Device for cooling and silencing of noise of a compressor or vacuum pump. 4,201,523, Cl. 417-312.000.
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Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,282, Cl. 192-98.000.
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,424, Cl. 308-6.00C.
Olsen, Jan-Erik, to AB Ziristor. Method for T or butt sealing of laminated all-plastic material. 4,201,609, Cl. 156-85.000.
Olson, Gary L.; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Synthesis of Vitamin E. 4,201,726, Cl. 568-413.000.
Olsson, Mats A. Device for cleaning fabric filters. 4,201,556, Cl. 55-292.000.
Olympus Optical Co., Ltd.: *See*—
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Yuta, Koichi, 4,201,440, Cl. 350-1.200.
O'Neal, Thomas D., to American Cyanamid Company. Imidazolinyl benzamides as plant growth regulants. 4,201,565, Cl. 71-76.000.
O'Neill, Charles E.; Ettel, Victor A.; Villazor, Alfredo; and Garritsen, Peter G., to Inco Limited. Electrowinning cell with bagged anode. 4,201,653, Cl. 204-263.000.
O'Neill, Eugene E., to United States Gypsum Company. Process for preparing calcined gypsum and gypsum board. 4,201,595, Cl. 106-109.000.
Onishi, Janet C.; Rowin, Gerald L.; and Miller, John E., Jr., to Merck & Co., Inc. Antibiotic A43F. 4,201,771, Cl. 424-177.000.
Ontario Energy Corporation: *See*—
Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.
Onyshkevych, Lubomyr S., to RCA Corporation. Inductance fabricated on a metal base printed circuit board. 4,201,965, Cl. 336-180.000.
Onyshkevych, Lubomyr S., to RCA Corporation. Method and apparatus for trimming resistors. 4,201,970, Cl. 338-195.000.
Orenstein & Koppel Aktiengesellschaft: *See*—
Frick, Egon, 4,201,305, Cl. 212-47.000.
Orr, John L., to Keystone Consolidated Industries, Inc. Sewing machine positioner device. 4,201,427, Cl. 312-21.000.
Orsinger, Winston A.; and Reinert, Warren D., to Bell & Howell Company. UV Label sprayer for segregating mail. 4,201,617, Cl. 156-351.000.
Osborg, Hans. Method of improving combustion of fuels and novel fuel compositions. 4,201,553, Cl. 44-52.000.
Oser, Zale, to Codman & Shurtleff, Inc. Method for fixation of prostheses to bone. 4,200,939, Cl. 3-1.900.
Oshima, Toshimichi: *See*—
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Oslin, G. Robert; and Seamans, Clarence, to Qonaar Corporation. Fare collection apparatus. 4,201,333, Cl. 232-7.000.
Ostersetzer, Shlomo; and Brochstein, Eugenius. Pivoted blade between rotor and stator having arcuate sections. 4,201,526, Cl. 418-136.000.
Otis Engineering Corporation: *See*—
Arendt, Henry P.; Deaton, Thomas M.; and Kohn, Gary A., 4,201,363, Cl. 251-62.000.
Taylor, Donald F., 4,201,364, Cl. 251-175.000.
Otten, David M., to International Totalizing Systems, Inc. Totalizer system. 4,201,907, Cl. 235-92.0AC.
Otteson, Wayne O.: *See*—
Charbonneau, Jack W.; Law, Richard S.; Ludwig, Willis J.; and Otteson, Wayne O., 4,201,404, Cl. 282-27.500.
Otuki, Yoshiharu: *See*—
Kimura, Masaharu; Otuki, Yoshiharu; Sugio, Akitoshi; and Furusawa, Tomotaka, 4,201,849, Cl. 525-401.000.
Outmans, Harry D., to Union Oil Company of California. Geothermal power plant. 4,201,060, Cl. 60-641.000.
Ovalstrapping, Inc.: *See*—
Pasic, James A., 4,201,127, Cl. 100-7.000.
Overfield, Norbert W., to Stanadyne, Inc. Fuel injection pump with positive displacement delivery valve having two port areas opened according to fuel flow rate. 4,201,170, Cl. 123-139.0BD.
Overton, Billy J., to FMC Corporation. Surface sweeper with floating broom chamber. 4,200,953, Cl. 15-349.000.
Owen, Kenneth. Power actuator for a coaxial R F power switch. 4,201,899, Cl. 200-153.00R.
Owens-Corning Fiberglas Corporation: *See*—
Shannon, Richard F., 4,201,247, Cl. 138-141.000.
Owens-Illinois, Inc.: *See*—
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Ninneman, Lawrence D., 4,201,535, Cl. 425-548.000.
Platt, Michael H., 4,201,264, Cl. 165-162.000.
Owens, James D. Ice cream dispenser. 4,201,112, Cl. 83-355.000.
Oyama, Hazime; Suzuki, Kohji; Mochizuki, Manabu; and Ohnuma, Teruyuki, to Ricoh Company, Ltd. Drum cleaning process and apparatus for electrophotography. 4,201,465, Cl. 355-15.000.
Oyama, Yoshishige: *See*—
Nishimura, Yutaka; and Oyama, Yoshishige, 4,201,166, Cl. 123-119.0EC.
Ozaki, Yoshisuke, to Massachusetts Institute of Technology. Chromatography method and apparatus. 4,201,671, Cl. 210-138.000.
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Paige, Janet N.: *See*—
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Palmai, Gyorgy: *See*—
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.
Palmer, Michael A. Pipe cover and holder. 4,201,231, Cl. 131-176.000.
Palmer, Warren G.; and Pritchard, John N., to FMC Corporation. Suspended solids meter. 4,201,477, Cl. 356-434.000.
Palosi, Eva: *See*—
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szaboles; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,201,723, Cl. 260-570.0AB.
Panclor S.A.: *See*—
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Pannenbecker, Heinrich. Blown film process. 4,201,741, Cl. 264-40.100.
Paptzun, George J.; Hall, Collin C.; and Bullwinkle, Benjamin B., to International Telephone and Telegraph Corporation. Lined gate valve having improved seat. 4,201,365, Cl. 251-328.000.
Paquin, Patrick J. Solid-fuel burner. 4,201,186, Cl. 126-83.000.
Paraframe, Inc.: *See*—
Vines, James K., 4,201,991, Cl. 343-840.000.
Paret, Giancarlo; Vetere, Alessandro; and Iori, Giuseppe, to Snamprogetti S.p.A. Separating aromatic hydrocarbons from mixtures containing them. 4,201,633, Cl. 203-58.000.
Parisi, Michael S.; and Pauly, John A., to Walter Kidde & Co., Inc. Temperature probe assembly. 4,201,968, Cl. 338-28.000.
Parker, Floyd J. Livestock restraining chute. 4,201,158, Cl. 119-98.000.
Parmar, Daljit-Singh: *See*—
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Parsons, David: *See*—
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Pasic, James A., to Ovalstrapping, Inc. Hold-down acceleration device. 4,201,127, Cl. 100-7.000.
Passagne, Claude G.; Lippler, Remy R.; Senet, Jean-Pierre G.; and Plazanet, Jacques, to Societe Nationale des Poudres et Explosifs. Aliphatic polycarbonate-triols and modified aminoplast resins derived therefrom. 4,201,720, Cl. 260-463.000.
Passoni, Teresio; Mascheroni, Alberto; and Calmes, Jean P., to Innocenti Santeustacchio S.p.A. Device for locking and releasing the mandrel-holding carriage of a piercing pressure mill. 4,201,097, Cl. 74-529.000.
Patel, Arvind M., to International Business Machines Corporation. Plural channel error correcting methods and means using adaptive reallocation of redundant channels among groups of channels. 4,201,976, Cl. 371-50.000.
Paterick, Robert J., to Maremont Corporation. Tubular assembly. 4,201,407, Cl. 285-304.000.
Patonay, Gabor: *See*—
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.
Patzelt, Heinrich; and Bokelmann, Horst, to Metzeler Schaum GmbH. Applicator device for flowable reaction masses. 4,201,321, Cl. 222-478.000.
Paul Wurth-S.A.: *See*—
Ulveling, Leon; Mailliet, Pierre; and Metz, Jean, 4,201,373, Cl. 266-271.000.
Pauly, John A.: *See*—
Parisi, Michael S.; and Pauly, John A., 4,201,968, Cl. 338-28.000.
Pawson, Beverly A.: *See*—
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Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., to FMC Corporation. Mono-5-substituted-3-chloro-4H-1,2,6-thiadiazin-4-one antifungal agents. 4,201,780, Cl. 424-246.000.
Pechorsky Gosudarstvenny Naucnno-Issledovalelsley I Proerthy Institut "Pechornipineft": *See*—
Likholai, Vasily K.; and Tjunkin, Boris A., 4,201,420, Cl. 299-2.000.
Perla, Guilio; and D'Arcangeli, Alessandro, to Colgate-Palmolive Company. Method of making soap bars. 4,201,743, Cl. 264-148.000.
Perren, Benno. Electrical instrument to detect the presence of liquid and method of operating the same. 4,201,914, Cl. 250-341.000.
Petersen, Ross K. Precleaner. 4,201,557, Cl. 55-327.000.
Peterson, David C., to Upjohn Company, The. 9-Deoxy-9,10-didehydro-PGD_2 analogs. 4,201,873, Cl. 562-503.000.
Peterson, Marvin L.; and Maxson, Orwin G., to Conoco, Inc. Sacrificial anode apparatus. 4,201,637, Cl. 204-148.000.
Petersson, Stig Anders. Method of effecting one of several different circuit connections. 4,202,038, Cl. 364-709.000.

Petit, Jean-Francois: *See*—
Ciorbaru nee Sfartz, Rita; Bona, Constantin; Chedid, Louis; Ledcrer, Edgar; and Petit, Jean-Francois, 4,201,768, Cl. 424-92.000.
Petri, Hermann: *See*—
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Petrille, Dennis G.: *See*—
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Petro-Canada Exploration Inc.: *See*—
Sanford, Emerson, 4,201,656, Cl. 208-11.0LE.
Petrov, Evgeny A.: *See*—
Bardin, Viktor P.; Petrov, Evgeny A.; Rudelson, Viktor M.; and Sternik, Jury L., 4,201,276, Cl. 184-55.00A.
Petzold, Manfred: *See*—
Waltenberger, Peter; Uphues, Gunter; and Petzold, Manfred, 4,201,680, Cl. 252-8.600.
Pflug, Gunther: *See*—
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Philips, Kochukadamthotil V. Adjustable clamp for V-block. 4,201,376, Cl. 269-156.000.
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MacEwen, George E., 4,201,328, Cl. 229-4.500.
Murtha, Timothy P., 4,201,632, Cl. 203-51.000.
Platt, Louis; and Poteet, Thomas S., 4,201,620, Cl. 156-494.000.
Wu, Yulin; Johnson, Marvin M.; and Nowack, Gerhard P., 4,201,875, Cl. 568-575.000.
Phillips, Robert L. Combination instrument for taking biomechanical measurements. 4,201,226, Cl. 128-774.000.
Philpott, David A.: *See*—
Couch, Philip R.; and Philpott, David A., 4,201,884, Cl. 375-53.000.
Phipps, Arthur L., to Condec Corporation. Foam extrusion die assembly. 4,201,534, Cl. 425-461.000.
Pickett, Lawrence F.: *See*—
Udo, Henry D.; and Pickett, Lawrence F., 4,202,015, Cl. 358-237.000.
Pierce, Everett T. Firewood cutting aid. 4,201,375, Cl. 269-46.000.
Pierson, Joseph E.; and Tarcza, Walter H., to Corning Glass Works. Method for hydrating silicate glasses. 4,201,561, Cl. 65-30.00R.
Pigerol, Charles; Eymard, Pierre; Vernieres, Jean-Claude; Werbenec, Jean-Pierre; and Epse Broll, Madeleine C., to Labaz. Secondary amines. 4,201,725, Cl. 260-583.00H.
Pillon, Rene, to Fives-Cail Babcock. Control unit for torch-cutting machines used in continuous casting. 4,201,371, Cl. 266-50.000.
Pinckney, Benjamin H.: *See*—
Chuss, David M.; and Pinckney, Benjamin H., 4,201,315, Cl. 222-66.000.
Pines, Arthur N.: *See*—
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Kobale, Manfred; Pink, Hans; and Schaefer, Helwig, 4,201,453, Cl. 350-340.000.
Pioneer Electronic Corporation: *See*—
Nagase, Tetsuo; Watanabe, Hideo; and Inomata, Akira, 4,202,021, Cl. 360-96.500.
Pirani, Giancarlo: *See*—
Dogliotti, Renato; and Pirani, Giancarlo, 4,201,909, Cl. 455-608.000.
Pitt, Gillies D.; and Gregorig, Stephen I. N., to ITT Industries, Incorporation. Oil concentration detector. 4,201,471, Cl. 356-70.000.
Pitts, Frank, to Engelhard Minerals & Chemicals Corporation. Processing of breunnerite to recover magnesium compounds. 4,201,750, Cl. 423-162.000.
Pixyfoto GmbH: *See*—
Viering, Rudolf, 4,201,458, Cl. 354-136.000.
Plastic Forming Company, Inc., The: *See*—
Schurman, Peter T., 4,201,531, Cl. 425-290.000.
Platt, Louis; and Poteet, Thomas S., to Phillips Petroleum Company. Web rolling apparatus. 4,201,620, Cl. 156-494.000.
Platt, Michael H., to Owens-Illinois, Inc. Solar water tank. 4,201,264, Cl. 165-162.000.
Plazanet, Jacques: *See*—
Passagne, Claude G.; Lippler, Remy R.; Senet, Jean-Pierre G.; and Plazanet, Jacques, 4,201,720, Cl. 260-463.000.
Pluck, John: *See*—
Tyrer, Philip G.; and Pluck, John, 4,201,178, Cl. 123-198.00D.
Podmaniczky, Andras: *See*—
Vadasz, Peter; Tokes, Szabolcs; Markus, Attila L.; Balazs, Karoly; Polya, Endre; Taller, Andras; and Podmaniczky, Andras, 4,201,455, Cl. 350-358.000.
Pogorski, Louis A.: *See*—
Kuehn, Lorne A.; and Pogorski, Louis A., 4,201,206, Cl. 128-201.130.
Polaroid Corporation: *See*—
Bedell, Stanley F.; Sullivan, Charles I.; and Taylor, Lloyd D., 4,201,587, Cl. 430-224.000.
Erlichman, Irving, 4,201,457, Cl. 354-86.000.
Trapani, Giorgio B., 4,201,450, Cl. 350-150.000.
Polizu, Radu: *See*—
Teodorescu, Constantin; and Polizu, Radu, 4,201,141, Cl. 110-259.000.
Pollet, Robert J.; Vandeputte, Camille A.; Sels, Francis J.; and van Veelen, George F., to Agfa-Gevaert, N.V. Photographic bleach compositions containing bleach-accelerating compounds. 4,201,585, Cl. 430-376.000.
Polya, Endre: *See*—
Vadasz, Peter; Tokes, Szabolcs; Markus, Attila L.; Balazs, Karoly; Polya, Endre; Taller, Andras; and Podmaniczky, Andras, 4,201,455, Cl. 350-358.000.
Polycarrier Company: *See*—
Crawford, Kenneth Z., 4,201,322, Cl. 224-45.0AB.
Polychrome Corporation: *See*—
Huang, Jen-Chi, 4,201,836, Cl. 428-457.000.
Pool, Clarence. Cabbing device for gemstones. 4,201,018, Cl. 51-229.000.
Popoff, Paul M.; Lee, Siu K.; and Touchton, James J., to Sperry Rand Corporation. Timing circuit and method for a track following servo in a data storage system. 4,202,019, Cl. 360-51.000.
Porta Systems Corp.: *See*—
DeLuca, Paul V., 4,202,026, Cl. 361-119.000.
Potain Poclain Materiel (P.P.M.): *See*—
Charles, Georges M., 4,201,511, Cl. 414-738.000.
Poteet, Thomas S.: *See*—
Platt, Louis; and Poteet, Thomas S., 4,201,620, Cl. 156-494.000.
PPG Industries, Inc.: *See*—
Bricker, Jack A., 4,201,563, Cl. 65-162.000.
Dupre, Dallas D., III, 4,201,652, Cl. 204-258.000.
Gillery, F. Howard, 4,201,649, Cl. 204-192.00P.
Tolliver, Richard J., 4,201,351, Cl. 242-56.00B.
Pratt, Albert R.: *See*—
Morrison, Raymond C.; and Pratt, Albert R., 4,201,096, Cl. 74-531.000.
Pratt & Lambert, Inc.: *See*—
Wolinski, Leon E.; Riebling, Richard G.; and Edholm, John H., 4,201,732, Cl. 525-363.000.
Preisa, Ieva E.: *See*—
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.
Preus, Paul. Protected aquatic sports area. 4,201,495, Cl. 405-63.000.
Primm, Raymond: *See*—
Copeland, James S.; and Primm, Raymond, 4,201,910, Cl. 250-216.000.
Primus Mfg., Inc.: *See*—
Culver, Irven H.; and Szymber, Oleg, 4,200,985, Cl. 33-141.00R.
Pritchard, John N.: *See*—
Palmer, Warren G.; and Pritchard, John N., 4,201,477, Cl. 356-434.000.
Produits Chimiques Ugine Kuhlmann: *See*—
Olah, George A., 4,201,730, Cl. 585-730.000.
Projectus Industriprodukter Aktiebolag: *See*—
Gustafsson, Berth U., 4,201,631, Cl. 203-1.000.
Psaar, Hubertus, to Bayer Aktiengesellschaft. Methine dyestuffs containing a phenyl azo group. 4,201,707, Cl. 260-162.000.
Pugh, Evan R.: *See*—
Stewart, Charles C.; Avidor, Joel M.; Pugh, Evan R.; and Lothrop, John W., 4,201,952, Cl. 331-94.50D.
Pugh, George W., Jr.: *See*—
Hughes, David E.; and Pugh, George W., Jr., 4,201,210, Cl. 128-260.000.
Pureza, Pablo C.: *See*—
Maklad, Mokhtar S.; and Pureza, Pablo C., 4,201,151, Cl. 118-642.000.
Puschner, Peter. Method and apparatus for arc welding. 4,201,906, Cl. 219-137.0PS.
Puyplat, Olivier, to Societe Industrielle de Mecanique. Reflector for automobile headlights. 4,201,452, Cl. 350-288.000.
Pye, David S.; and Fischer, Paul W., to Union Oil Company of California. Foam drilling and workover in high temperature wells. 4,201,678, Cl. 252-8.50A.
Pyramid Manufacturing Company: *See*—
Jennings, Gary L., 4,201,022, Cl. 52-118.000.
Pyroban Limited: *See*—
Tyrer, Philip G.; and Pluck, John, 4,201,178, Cl. 123-198.00D.
Qonaar Corporation: *See*—
Oslin, G. Robert; and Seamans, Clarence, 4,201,333, Cl. 232-7.000.
Quadri, Farooq M., to Burroughs Corporation. Bubble memory defect tolerant logic control circuit. 4,202,043, Cl. 365-15.000.
Qualidyne Systems, Inc.: *See*—
Cathell, Franklin J., 4,201,957, Cl. 331-110.000.
Quarz-Zeit AG: *See*—
Sudler, Roland; and Happel, Walter, 4,201,929, Cl. 310-49.00R.
Queen's University at Kingston: *See*—
Wan, Jeffrey K. S.; and Chen, Kuang S., 4,201,638, Cl. 204-158.00R.
Quinlan, William P.: *See*—
Lovgren, Jeffrey L.; and Quinlan, William P., 4,202,020, Cl. 360-75.000.
Quirk, Leo. Auxiliary safety valve for a pressurized fluid system. 4,201,244, Cl. 137-614.200.
Racz, Janos A.: *See*—
Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., 4,201,430, Cl. 339-5.00M.

Raimond, Charles L.: *See*—
Barber, Harold G., Jr.; and Raimond, Charles L., 4,201,107, Cl. 84-1.140.

Rakshys, Joseph W.: *See*—
Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., 4,201,729, Cl. 260-665.00R.

Ramesohl, Hubert: *See*—
Herchenbach, Horst; Ramesohl, Hubert; Kuhs, Rudolf; and Schneider, Kurt, 4,201,546, Cl. 432-106.000.

Ramhorst, Louis H. Wild well control method and apparatus. 4,201,267, Cl. 166-315.000.

Randell, Arthur A.; and Hodgkinson, Norman, to Coal Industry (Patents) Limited. Method of heat treating a material. 4,201,676, Cl. 252-1.000.

Randow, Albert: *See*—
Schunk, Gunter; and Randow, Albert, 4,201,915, Cl. 250-343.000.

Rannenberg, Katherine. Perpetual or long life calendar. 4,201,405, Cl. 283-4.000.

Rao, Ganta V.; and Shoup, Floyd K., to Far-Mar-Co., Inc. Method for fractionating the whole wheat kernel by sequential milling. 4,201,708, Cl. 260-112.00G.

Rathmell, Richard K. Automatic speed shift for bicycles and the like. 4,201,094, Cl. 74-217.00B.

Rautenberg, Peter; Hildenbrand, Hartmut; and Parmar, Daljit-Singh, to AEG - Telefunken Kabelwerke AG, Rheydt. Manufacture of optical fiber cables. 4,201,607, Cl. 156-70.000.

Raytheon Company: *See*—
Bierig, Robert W.; and Steele, S. Robert, 4,201,604, Cl. 148-175.000.
Morrison, Raymond C.; and Pratt, Albert R., 4,201,096, Cl. 74-531.000.

RCA Corporation: *See*—
Khajezadeh, Heshmat, 4,202,006, Cl. 357-63.000.
Onyshkevych, Lubomyr S., 4,201,965, Cl. 336-180.000.
Onyshkevych, Lubomyr S., 4,201,970, Cl. 338-195.000.
Reichert, Walter F.; and Huang, Ho-Chung, 4,202,001, Cl. 357-22.000.
Schade, Otto H., Jr., 4,201,947, Cl. 330-253.000.
Scott, Joseph H., Jr.; and Ipri, Alfred C., 4,201,603, Cl. 148-174.000.
Smith, Joseph L., 4,201,932, Cl. 315-13.00C.
Zuk, Borys, 4,201,927, Cl. 307-269.000.

Reed, Robert D.: *See*—
Zink, John S.; and Reed, Robert D., 4,201,191, Cl. 126-360.00A.

Reed, Russell, Jr.; Sieg, George F.; Rhyn, Elmer J.; and Waldon, Billy E., to United States of America, Navy. Gas generator propellant for airbreathing missiles. 4,201,605, Cl. 149-19.100.

Reed, Terry J.; and Smith, Jack R., to Westinghouse Electric Corp. Combined cycle electric power plant and a gas turbine having improved megawatt load control. 4,201,923, Cl. 290-40.00R.

Reichert, Theodore J.: *See*—
Larson, Donald A.; and Reichert, Theodore J., 4,201,298, Cl. 206-387.000.

Reichert, Walter F.; and Huang, Ho-Chung, to RCA Corporation. Semiconductor device having grid for plating contacts. 4,202,001, Cl. 357-22.000.

Reid, Ansell L.: *See*—
Allain, Ronald J.; Braithwaite, David G.; and Reid, Ansell L., 4,201,758, Cl. 423-497.000.

Reidelbach, Willi; and Schmid, Walter, to Daimler-Benz Aktiengesellschaft. Anchoring arrangement of an end- or deflection-point of a safety belt, especially in motor vehicles. 4,201,418, Cl. 297-474.000.

Reim, William K. Film image removal process and apparatus. 4,201,015, Cl. 51-74.00R.

Reimer, Hans: *See*—
Wirth, Alfred; Reimer, Hans; Mackert, Klaus; Diehl, Franz; and Splett, Klaus, 4,201,246, Cl. 138-30.000.

Reinert, Warren D.: *See*—
Orsinger, Winston A.; and Reinert, Warren D., 4,201,617, Cl. 156-351.000.

Reithel, Raymond F., to Eastman Kodak Company. Electrically activated recording material and process. 4,201,583, Cl. 430-97.000.

Reithel, Raymond F., to Eastman Kodak Company. Electrically activated recording material and process. 4,201,591, Cl. 430-619.000.

Renner, Robert C.: *See*—
Rollag, Dwayne A.; Dornbush, James N.; and Renner, Robert C., 4,201,663, Cl. 210-16.000.

Revermann, Mike; and Spector, George. Balloon buster game. 4,201,387, Cl. 273-243.000.

Rexham Corporation: *See*—
Wiles, Jerald R., 4,201,031, Cl. 53-455.000.

Rhone-Poulenc Industries: *See*—
Violland, Robert; and Lagasse, Alain, 4,201,824, Cl. 428-262.000.

Rhone-Poulenc-Textile: *See*—
Sangalli, Silvio, 4,201,032, Cl. 53-522.000.

Rhyn, Elmer J.: *See*—
Reed, Russell, Jr.; Sieg, George F.; Rhyn, Elmer J.; and Waldon, Billy E., 4,201,605, Cl. 149-19.100.

Ribich, William A.; Hug, Hans A.; and Bellows, Alfred H., to Foster-Miller Associates, Inc. Roof bolter. 4,201,270, Cl. 173-43.000.

Richards, Albert G. Teaching device and method for dental X-ray techniques. 4,200,996, Cl. 35-17.000.

Richards, George B.: *See*—
Bethea, James W., III; Mitchell, O. Clayton; and Richards, George B., 4,201,225, Cl. 128-746.000.

Richardson Company, The: *See*—
Lombardi, Louis J.; and Coyne, Roy J., 4,201,842, Cl. 430-281.000.

Richter, Ary W.: *See*—
Ingelman, Bjorn G.; Richter, Ary W.; and Granath, Kirsti A., 4,201,772, Cl. 424-180.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See*—
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szaboles; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,201,723, Cl. 260-570.0AB.

Ricoh Company, Ltd.: *See*—
Oyama, Hazime; Suzuki, Kohji; Mochizuki, Manabu; and Ohnuma, Teruyuki, 4,201,465, Cl. 355-15.000.

Riebling, Richard G.: *See*—
Wolinski, Leon E.; Riebling, Richard G.; and Edholm, John H., 4,201,732, Cl. 525-363.000.

Riechert, Dieter. Grate with replaceable wear elements. 4,201,545, Cl. 432-239.000.

Riegert, Richard P., to Ferran, Robert J. Closed-loop sputtering system and method of operating same. 4,201,645, Cl. 204-192.00R.

Rieppel, Perry J.; and Sadauskas, Raymond A., to Arcair Company. Electrode for air-carbon arc cutting and gouging. 4,201,902, Cl. 219-69.00M.

Rieter Machine Works Ltd.: *See*—
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,201,036, Cl. 57-291.000.

Rigazio, Anthony W.; and Rubin, Allen, to Spartus Corporation. Package for protection and display of clocks and the like. 4,201,293, Cl. 206-45.190.

Rinne, Gerhart; and Sachtler, Jurgen, to Dragerwerk Aktiengesellschaft. Breathing gas humidifier. 4,201,204, Cl. 128-203.270.

Rittler, Hermann L., to Corning Glass Works. Method of producing a glass-ceramic. 4,201,559, Cl. 65-2.000.

Robb, John: *See*—
Meek, Nigel W.; Robb, John; and Munro, James A., 4,201,033, Cl. 56-13.600.

Robbins, Gene A. Portable gas laser and power supply. 4,201,949, Cl. 331-94.5PE.

Robbins, Gene A. Laser system with triangulated capacitor encircling the laser head. 4,201,953, Cl. 331-94.5PE.

Robbins, Raymond E. Vine support and/or guide clip for installation on brick walls. 4,201,013, Cl. 47-44.000.

Robert Bosch GmbH: *See*—
Jaggle, Gunther; Scharl, Herbert; and Krauss, Rudolf, 4,201,172, Cl. 123-139.0AW.

Roberts, Thomas G.: *See*—
Holl, Herbert B.; and Roberts, Thomas G., 4,201,474, Cl. 356-369.000.

Robertshaw Controls Company: *See*—
Katchka, Jay R.; and Kelly, Samuel T., 4,200,972, Cl. 29-602.00R.
Marquis, Edgar E., 4,200,974, Cl. 29-622.000.

Robertson Paper Box Co., Inc.: *See*—
Davidson, Thomas L., 4,201,291, Cl. 206-44.00R.
Davidson, Thomas L.; and Gonet, Charles F., 4,201,292, Cl. 206-44.00R.

Robinson, Frederick J.; and Tracy, Clarence J., to Motorola, Inc. Method for removing photoresist by hydrogen plasma. 4,201,579, Cl. 430-323.000.

Robinson, T. Garrett. Device for increasing efficiency of fuel. 4,201,140, Cl. 110-218.000.

Robson, Ernest G.: *See*—
Croucher, Robert L.; and Robson, Ernest G., 4,201,001, Cl. 37-190.000.

Rocca, Anthony A. Accessory item. 4,201,807, Cl. 428-35.000.

Roccaforte, Harry I., to Champion International Corporation. Hand locked display carton and blank therefore. 4,201,294, Cl. 206-45.140.

Roccaforte, Harry I., to Champion International Corporation. Double cell slide dispenser. 4,201,329, Cl. 229-17.0SC.

Rohm and Haas Company: *See*—
Russell, Larry M., 4,201,823, Cl. 428-246.000.

Rohn, Charles L., to Mobil Oil Corporation. Flexible plastic foam. 4,201,818, Cl. 428-159.000.

Rollag, Dwayne A.; Dornbush, James N.; and Renner, Robert C. Method and apparatus for the enhanced treatment of food processing waste waters using aerobic microorganisms. 4,201,663, Cl. 210-16.000.

Rolls-Royce Limited: *See*—
Dodd, Alec G., 4,201,044, Cl. 60-39.09R.

Rolls-Royce (1971) Limited: *See*—
Sales, Stephen, 4,201,513, Cl. 416-2.000.

Romerdahl, Ronald W.; and Knight, Milton R., to Sundstrand Data Control, Inc. Thermal switch and method of assembly and tool used therein. 4,201,967, Cl. 337-354.000.

Ronayne, Walter M.: *See*—
Mack, Frank J.; and Ronayne, Walter M., 4,201,289, Cl. 206-0.500.

Ronc, Michel, to Elf Union. Solar energy absorbing roof. 4,201,193, Cl. 126-448.000.

Rope, Eugene L.: *See*—
Tricoles, Gus P.; and Rope, Eugene L., 4,201,987, Cl. 343-703.000.

Roscherwerke GmbH: *See*—
Franzke, Jurgen, 4,201,483, Cl. 366-139.000.

Rosenquist, Niles R.: *See*—
Cohen, Stuart C.; and Rosenquist, Niles R., 4,201,704, Cl. 260-40.00R.

Ross, Frederick W. Impact device with linear single acting air spring. 4,201,269, Cl. 173-1.000.

Roth, Eldon N. Method and apparatus for dividing fat and lean meat. 4,201,302, Cl. 209-577.000.

Roth, Robert B., to Coastal Abrasive & Tool Company Inc. Rotary stripper. 4,200,965, Cl. 29-81.00J.

Roumanis, Paul J., to General Electric Company. Motor speed regulator and control system. 4,201,936, Cl. 318-341.000.

Rowe, David E. Lift apparatus for camper top. 4,201,413, Cl. 296-165.000.

Rowell, Robert L.; and Vasconcellos, Stephen R., to New England Power Service Company. Coal-oil slurry compositions. 4,201,552, Cl. 44-51.000.

Rowell, Ross F. Brassiere wires. 4,201,220, Cl. 128-476.000.

Rowin, Gerald L.: *See—*
Onishi, Janet C.; Rowin, Gerald L.; and Miller, John E., Jr., 4,201,771, Cl. 424-177.000.

Royco Instruments, Inc.: *See—*
Strobel, Stanley W., 4,202,033, Cl. 364-416.000.

Rubin, Allen: *See—*
Rigazio, Anthony W.; and Rubin, Allen, 4,201,293, Cl. 206-45.190.

Rubinstein, Murray: *See—*
Lawrence, Alan J.; Denenberg, Jeffrey N.; Rubinstein, Murray; and Upp, Daniel C., 4,201,890, Cl. 370-68.000.

Rudelson, Viktor M.: *See—*
Bardin, Viktor P.; Petrov, Evgeny A.; Rudelson, Viktor M.; and Sternik, Jury L., 4,201,276, Cl. 184-55.00A.

Rudszinat, Willy, to Hauni-Werke Korber & Co., KG. Apparatus for subdividing running webs into sections of varying length. 4,201,102, Cl. 83-298.000.

Rug Crafters: *See—*
Montell, Joseph J., 4,201,811, Cl. 428-92.000.

Ruin, Jean, to Mitchell S.A. Fishing reels. 4,201,355, Cl. 242-84.10R.

Russell, Diane H.: *See—*
Voorhees, John J.; and Russell, Diane H., 4,201,788, Cl. 424-304.000.

Russell, Larry M., to Rohm and Haas Company. Method for making fiber reinforced articles. 4,201,823, Cl. 428-246.000.

Russell, Ronald G.: *See—*
Whitworth, Eddie L.; and Russell, Ronald G., 4,202,040, Cl. 364-900.000.

Rutgerswerke Aktiengesellschaft: *See—*
Jellinek, Karl; and Muller, Rolf, 4,201,835, Cl. 428-288.000.

Ryan, Edward C.: *See—*
Bigbee, Marvin L.; Lindstrom, Harold R.; and Ryan, Edward C., 4,201,348, Cl. 241-101.00B.

Rysti, Alpo. Lumber-stacking method and apparatus. 4,201,506, Cl. 414-68.000.

S.I.T.I. Societa Impianti Termoelettrici Industriali (s.a.s.): *See—*
Bossetti, Renato, 4,201,542, Cl. 432-128.000.

Sabo, Stephen C.: *See—*
Bartley, Donald R.; Sidles, James; and Sabo, Stephen C., 4,201,261, Cl. 152-357.00A.

Sabol, Albert R.; Petrille, Dennis G.; and Heffern, Edward W., to Standard Oil Company (Indiana). Method of preparing overbased magnesium sulfonates. 4,201,682, Cl. 252-33.400.

Sachtler, Jurgen: *See—*
Rinne, Gerhart; and Sachtler, Jurgen, 4,201,204, Cl. 128-203.270.

Sadauskas, Raymond A.: *See—*
Rieppel, Perry J.; and Sadauskas, Raymond A., 4,201,902, Cl. 219-69.00M.

Sado, Ryoichi: *See—*
Nakamura, Akio; and Sado, Ryoichi, 4,201,435, Cl. 339-59.00M.

Saeman, Walter C.; Coe, Noel N.; and Faust, John P., to Olin Corporation. Granular calcium hypochlorite coated with an inorganic salt. 4,201,756, Cl. 423-266.000.

Saglio, Robert, to Commissariat a l'Energie Atomique. Ultrasonic centering apparatus. 4,201,971, Cl. 367-95.000.

Sahlstorfer, Hermann: *See—*
Derschmidt, Hans; and Sahlstorfer, Hermann, 4,201,515, Cl. 416-134.00A.

Sakaguchi, Shinji; Kubodera, Seiiti; Arakawa, Jun; Shiba, Keisuke; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd.; and National Patent Development Corporation. Silver halide photo-sensitive material prepared with solvent and solvent soluble polymer. 4,201,589, Cl. 430-139.000.

Sakhuja, Ravinder K., to Thermo Electron Corporation. Jet impingement solar collector. 4,201,195, Cl. 126-449.000.

Sakurai, Tadashi: *See—*
Ohgishi, Tsutomu; Akiyama, Toru; and Sakurai, Tadashi, 4,201,945, Cl. 455-183.000.

Salama, Amal M.: *See—*
United States of America, National Aeronautics and Space Administration; and Salama, Amal M., 4,201,622, Cl. 156-605.000.

Sales, Stephen, to Rolls-Royce (1971) Limited. Gas turbine engines. 4,201,513, Cl. 416-2.000.

Salje, Ernst; and Bartsch, Ulrich, to Salje, Ernst. Circular saw tool. 4,201,103, Cl. 83-835.000.

Sampey, Harry R. Digital magnetic data storage and retrieval using audio analog recording techniques. 4,202,016, Cl. 360-40.000.

Samuel Moore and Company: *See—*
Farkas, Richard W., 4,200,973, Cl. 29-611.000.

Samuels, Peter B.; and Wood, Ernest C. Cartridge for a surgical clip applying device. 4,201,314, Cl. 221-198.000.

Sanders, James M.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

Sanders, Paul W., to TRW Inc. Distributed collector ballast resistor structure. 4,202,005, Cl. 357-51.000.

Sandoz Inc.: *See—*
Kathawala, Faizulla G., 4,201,785, Cl. 424-274.000.

Sanford, Emerson, to Petro-Canada Exploration Inc.; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity; Ontario Energy Corporation; Imperial Oil Limited; Canada-Cities Service, Ltd.; and Gulf Oil Canada Limited. Process aid addition in hot water process based on feed fines content. 4,201,656, Cl. 208-11.0LE.

Sangalli, Silvio, to Rhone-Poulenc-Textile. Apparatus for making bundles of textile strands. 4,201,032, Cl. 53-522.000.

Sankyo Company Limited: *See—*
Itoh, Yasuhiro; Nakahara, Masaki; Takiguchi, Yo; Arai, Mamoru; Haneishi, Tatsuo; Inukai, Masatoshi; and Nakajima, Mutsuo, 4,201,769, Cl. 424-117.000.

Sanraku Ocean Co., Ltd.: *See—*
Okamoto, Rokuro; Fukumoto, Tsumoru; Takamatsu, Akira; and Takeuchi, Tomio, 4,201,843, Cl. 435-76.000.

Sanyo Electric Co., Ltd.: *See—*
Hosoya, Nobukazu, 4,201,962, Cl. 333-25.000.
Ohgishi, Tsutomu; Akiyama, Toru; and Sakurai, Tadashi, 4,201,945, Cl. 455-183.000.

Sasayama, Takao; and Suda, Seiji, to Hitachi, Ltd. Control system for internal combustion engine. 4,201,161, Cl. 123-32.0EB.

Sasiela, Ronald J.; and Layne, Daniel T., to Modern Maid Food Products, Inc. Continuous mixing apparatus. 4,201,484, Cl. 366-153.000.

Sasmoco, S.A.: *See—*
Neukomm, Serge, 4,201,234, Cl. 131-265.000.

Sastri, Chaturvedula: *See—*
Erdtmann, Gerhard; Sastri, Chaturvedula; Kuppers, Gottfried; and Petri, Hermann, 4,201,625, Cl. 176-11.000.

Satellite Business Systems: *See—*
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Sato, Hideaki: *See—*
Hoshito, Kazuo; Sato, Hideaki; Kitamura, Takashi; and Masegi, Koichi, 4,201,994, Cl. 346-108.000.
Yoshikawa, Hiroshi; Kawakami, Akihiro; and Sato, Hideaki, 4,202,029, Cl. 361-394.000.

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Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Printing pressure damping mechanism for hand labeler. 4,201,133, Cl. 101-288.000.

Sato, Yo, to Kabushiki Kaisha Sato. Printing pressure damping mechanism for hand labeler. 4,201,134, Cl. 101-288.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Portable label printing and applying machine. 4,201,619, Cl. 156-384.000.

Saucy, Gabriel: *See—*
Cohen, Noal; and Saucy, Gabriel, 4,201,869, Cl. 560-255.000.
Olson, Gary L.; and Saucy, Gabriel, 4,201,726, Cl. 568-413.000.

Saunders, Frederick H. Building panel and panel assembly. 4,201,020, Cl. 52-580.000.

Saunders, Norman B. Curtain assembly. 4,201,189, Cl. 126-429.000.

Savage, David W.; Chang, Chin H.; and Longo, John M., to Exxon Research & Engineering Co. Use of nonstoichiometric carbon-sulfur compounds to remove components from liquids. 4,201,665, Cl. 210-32.000.

Scarlett, John C.; and Beggs, Donald, to Midrex Corporation. Method for the direct reduction of iron and production of fuel gas using gas from coal. 4,201,571, Cl. 75-35.000.

Schade, Otto H., Jr., to RCA Corporation. Long-tailed-pair connections of MOSFET's operated in sub-threshold region. 4,201,947, Cl. 330-253.000.

Schaefer, Dieter: *See—*
Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, 4,201,149, Cl. 118-52.000.

Schaefer, Helwig: *See—*
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Schaller, Joseph P. Simulated football game. 4,201,383, Cl. 273-94.000.

Scharl, Herbert: *See—*
Jaggle, Gunther; Scharl, Herbert; and Krauss, Rudolf, 4,201,172, Cl. 123-139.0AW.

Scheidler, Herwig; Wennemann, Dietmar; and Schwank, Bernd, to Jenaer Glaswerk Schott & Gen. Glass ceramic stove and subassemblies therefor. 4,201,184, Cl. 126-39.0OJ.

Scheinhaus, Myron G.; and Jacobson, Paul R. Sandal. 4,200,997, Cl. 36-11.500.

Scheirer, James W.: *See—*
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Schellekens, Joannes C. A.: *See—*
Blanken, Thomas C.; and Schellekens, Joannes C. A., 4,201,812, Cl. 428-95.000.

Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, to Rieter Machine Works Ltd. False twist machine. 4,201,036, Cl. 57-291.000.

Schenek, Anton: *See—*
Artzt, Peter; Hehl, Rudolf; Egbers, Gerhard; and Schenek, Anton, 4,201,037, Cl. 57-301.000.

Schenk-Filterbau Gesellschaft mit beschrankter Haftung: *See—*
Baur, Rolf, 4,201,670, Cl. 210-75.000.

Schenkel, Eduard: *See—*
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,201,036, Cl. 57-291.000.
Schenz, Manfred, to Wilhelm Mende & Company. Laminated chipboard. 4,201,819, Cl. 428-172.000.
Schering Corporation: *See—*
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Schertler, William E. Check valve with removable seat. 4,201,241, Cl. 137-527.000.
Schindler, Rudolf: *See—*
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Schmid, Max: *See—*
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Schmid, Walter: *See—*
Reidelbach, Willi; and Schmid, Walter, 4,201,418, Cl. 297-474.000.
Schmidt, Gunter, to Du Pont de Nemours, E. I., and Company. X-ray film loader. 4,201,919, Cl. 250-468.000.
Schmidt, Willi: *See—*
Kamfe, Eberhard; and Schmidt, Willi, 4,200,963, Cl. 26-73.000.
Schmidt, William G., to Satellite Business Systems. Multi-rate TDMA communication system. 4,201,892, Cl. 370-104.000.
Schmitt, Hans J.: *See—*
Ehrly, Albrecht; and Schmitt, Hans J., 4,201,470, Cl. 356-39.000.
Schmitt, Marvin G. Gauge. 4,200,987, Cl. 33-178.00R.
Schneider, Abraham: *See—*
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Schneider, Heinz-Georg: *See—*
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Schneider, Kurt: *See—*
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Schnoes, Heinrich K.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,201,881, Cl. 568-819.000.
Schoettle, Klaus; Uhl, Karl; Wittkamp, Heinrich; Dobler, Peter; and Lewin, Helmut, to BASF Aktiengesellschaft. Cartridge arrangement comprising an adapter. 4,201,356, Cl. 242-197.000.
Scholl, Inc.: *See—*
Sichak, Stephen, 4,201,765, Cl. 424-45.000.
Schonberger, Milton. Method of adjusting resistance of a thermistor. 4,200,970, Cl. 29-593.000.
Schoppe, Fritz. Process and installation for the production of calcined material. 4,201,541, Cl. 432-58.000.
Schor, S. Allen, to El Mar Plastics, Inc. Winding core for magnetic tape adapted for stacking. 4,201,353, Cl. 242-68.500.
Schreiber, William L.: *See—*
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.
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Schroeder, James E., to Harris Corporation. VMOS transistor and method of fabrication. 4,200,968, Cl. 29-571.000.
Schubert & Salzer: *See—*
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Schuchert, Barton O., to Amana Refrigeration, Inc. Adjustable safety interlock for microwave ovens. 4,201,901, Cl. 219-10.55C.
Schumann, Klaus: *See—*
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Schunk, Gunter; and Randow, Albert, to Leybold-Hereaus GmbH & Co. KG. Pneumatic infrared radiation detector having a hermetically sealed chamber and a window. 4,201,915, Cl. 250-343.000.
Schurman, Peter T., to Plastic Forming Company, Inc., The. Reinforced bearing aperture in thermoplastic sheet material. 4,201,531, Cl. 425-290.000.
Schwander, Andreas: *See—*
Schellenberg, Hans; Schenkel, Eduard; Schwander, Andreas; and Thalmann, Dieter, 4,201,036, Cl. 57-291.000.
Schwank, Bernd: *See—*
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Schwarte, Jurgen: *See—*
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Schwartzburg, James H.; Little, Eric A.; and Wilson, Eddie A., to Packer Plastics, Inc. Injection molding of embossed articles. 4,201,360, Cl. 249-140.000.
Schweizerische Lokomotiv-und Maschinenfabrik: *See—*
Meier, Bruno; and Luginbuhl, Otto, 4,201,277, Cl. 188-196.00D.
Schwinghammer, Gunther, to Holstein und Kappert GmbH. Apparatus for cleaning plate-type filter elements located in a tank filter. 4,201,674, Cl. 210-333.00R.
Schwitters, Stephen W.; and Aylesworth, Preston L., to Beatrice Foods Co. Method and apparatus for preparing and dispensing a semi-frozen product. 4,201,558, Cl. 62-70.000.
SCM Corporation: *See—*
Fitch, Steven J.; and Tanner, Charles A., 4,201,570, Cl. 75-1.00T.
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Scott & Fetzer Company, The: *See—*
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Scott, Joseph H., Jr.; and Ipri, Alfred C., to RCA Corporation. Method of fabricating improved short channel MOS devices utilizing selective etching and counterdoping of polycrystalline silicon. 4,201,603, Cl. 148-174.000.
Seale, Glenn C.; and Frame, George L., to Triad Associates. Genealogy apparatus. 4,201,386, Cl. 273-236.000.
Sealectro Corporation: *See—*
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Seaman, Clay H.: *See—*
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Seaton, John J.; and Slagle, James K., to United States Steel Corporation. Graphite lubricant application method. 4,201,070, Cl. 72-42.000.
Seecamp, Lueder. Telescoping return-spring assembly for automatic handguns. 4,201,113, Cl. 89-199.000.
Seelenbinder, Terry G., to AM International, Inc. Photoprinter with self-locating roll spreader. 4,201,466, Cl. 355-104.000.
Segal, Leon, to Allied Chemical Corporation. Novel polyesters and preparation thereof by interfacial condensation of bifunctional acid halides or anhydrides with bisphenols. 4,201,855, Cl. 528-125.000.
Segawa, Takashi, to Shimano Industrial Company Limited. Gear crank for bicycles. 4,201,120, Cl. 74-594.200.
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Shakertown Corporation: *See—*
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Sharp Kabushiki Kaisha: *See—*
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Inami, Yasuhiko; Hishida, Tadanori; Yano, Kozo, Hamada, Hiroshi; and Nakauchi, Hiroshi, 4,201,985, Cl. 340-785.000.
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Shell Oil Company: *See—*
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Sherritt Gordon Mines Limited: *See—*
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Shiba, Keisuke: *See—*
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Shiino, Satoru: *See—*
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Shillingford, John T., Jr.: *See—*
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Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,036, Cl. 364-420.000.

Shimano Industrial Company Limited: *See*—
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Shimizu, Makoto; and Shirakawa, Kunikazu, to Shinano Kenshi Co., Ltd. Method of manufacturing cup-shaped coil assembly of electric motors. 4,200,971, Cl. 29-598.000.
Shimizu, Nobuo: *See*—
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Shimizu, Toshiyuki, to Hajime Industries, Ltd. Data processing and storage system using filtering and sampling techniques. 4,201,977, Cl. 340-146.30H.
Shimoi, Osamu: *See*—
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Shin-Etsu Chemical Co., Ltd.: *See*—
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Shinano Kenshi Co., Ltd.: *See*—
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Shirakawa, Kunikazu: *See*—
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Shirasawa, Toshikatsu: *See*—
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Shukla, Jayendra G.; Smith, Ray E.; and Nicholson, Richard R., to Velsicol Chemical Corporation. Intumescent composition comprising cyclic nitrogen compound and phosphorus compounds. 4,201,677, Cl. 252-8.100.
Shukla, Jayendra G.: *See*—
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Shulgin, Grigory M.: *See*—
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Shumate, Michael S.: *See*—
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Shupe, Charles A., to Canron Corporation. Rail hardening machine and method. 4,201,602, Cl. 148-146.000.
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Sichak, Stephen, to Scholl, Inc. Preparation for treating dermatitis in the nature of tinea pedis. 4,201,765, Cl. 424-45.000.
Sidles, James: *See*—
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Sieg, George F.: *See*—
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Sienkowski, Kenneth J.; Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., to Velsicol Chemical Corporation. Novel intumescent composition. 4,201,593, Cl. 106-18.140.
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Simko, David M.: *See*—
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Sinclair, Alexander S.; and Eccleston, Barry C., to A. Monk & Company Limited. Means for the renovating and refurbishing of overhead structures. 4,201,275, Cl. 182-37.000.
Siraco, Frank J.: *See*—
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,034, Cl. 364-420.000.
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,036, Cl. 364-420.000.
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Skow, Lynn R., to Gemini Systems, Inc. Modular solid fuel furnace system. 4,201,187, Cl. 126-110.00E.
Skutta, Frank R.; and Tice, Lee D., to Motorola, Inc. Method for automatically matching a radio frequency transmitter to an antenna. 4,201,960, Cl. 333-17.00M.
Slagle, James K.: *See*—
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Slamar, Frank, to United States Steel Corporation. Method for increasing the scrap melting capability of bottom blown processes. 4,201,572, Cl. 75-60.000.
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Slepak, Bernard; Tucker, John E.; and Heinrich, William P., to Slepak, Bernard. Moisture indicator. 4,201,080, Cl. 73-73.000.
Slinkard, William E., to Celanese Corporation. Reaction of methanol with synthesis gas. 4,201,868, Cl. 560-232.000.
Slusarczuk, George M. J.; and Brooks, Ronald E., to General Electric Company. Magnetic adsorbent composite. 4,201,831, Cl. 428-403.000.
Smies, Jan F.; and Dijkmans, Leo, to Cemsto B.V. Device for cleaning floors by means of a liquid. 4,200,952, Cl. 15-322.000.
Smith, Donald C. Endoscope attachment to a viewing instrument for insertion into the uterine cavity. 4,201,199, Cl. 128-7.000.
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Smith, Jesse C. Chassis for printed circuit boards. 4,201,303, Cl. 211-41.000.
Smith, Joseph L., to RCA Corporation. Color purity adjusting method. 4,201,932, Cl. 315-13.00C.
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Smith, William R.: *See*—
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SmithKline Corporation: *See*—
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Smolka, Heinz G.; and Schumann, Klaus, to Henkel Kommanditgesellschaft auf Aktien; and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of tenside-containing cation exchanger aluminosilicates. 4,201,689, Cl. 252-184.000.
Smythe, Lloyd E.: *See*—
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Snamprogetti S.p.A.: *See*—
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Societe Nationale des Poudres et Explosifs: *See*—
Gerbet, Roger G.; Leroux, Jean-Claude; Morin, Daniel L.; and Leclercq, Marius F., 4,201,381, Cl. 273-73.00F.
Passagne, Claude G.; Lippler, Remy R.; Senet, Jean-Pierre G.; and Plazanet, Jacques, 4,201,720, Cl. 260-463.000.
Sokolik, Joseph E., Jr.: *See*—
Kosseim, Alexander J. M.; Atwood, Gilbert R.; and Sokolik, Joseph E., Jr., 4,201,752, Cl. 423-235.000.
Solarex Corporation: *See*—
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Soref, Richard A.: *See*—
McMahon, Donald H.; and Soref, Richard A., 4,201,442, Cl. 350-96.140.
Sorema, Srl: *See*—
Gazzoni, Domenico, 4,200,991, Cl. 34-57.00R.
Sorenson, Roderick J.: *See*—
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Soundstream, Inc.: *See*—
Stockham, Thomas G., Jr., 4,202,018, Cl. 360-47.000.
Southall, Peter: *See*—
Jacobs, Philip F.; Friedman, Evelyn; Southall, Peter; and Carswell, William, 4,201,283, Cl. 194-1.00A.
Southern Imperial, Inc.: *See*—
Donnelli, Joseph W.; and Barnes, Richard D., 4,201,255, Cl. 144-32.00R.
Spadaro, James J.: *See*—
Kadan, Ranjit S.; Freeman, Donald W.; Spadaro, James J.; and Ziegler, George M., Jr., 4,201,709, Cl. 260-123.500.
Sparkman, James M. Fishing lure and sinker. 4,201,008, Cl. 43-43.130.
Spartus Corporation: *See*—
Rigazio, Anthony W.; and Rubin, Allen, 4,201,293, Cl. 206-45.190.
Spaziante, Placido M.; Giuffre, Luigi; and Modica, Giovanni, to Panclor S.A. Measuring electrodes and process. 4,201,647, Cl. 204-195.00F.
Speckhart, Frank H. Aluminum valve spring retainer. 4,201,162, Cl. 123-90.670.
Spector, George: *See*—
Armstrong, James A.; and Spector, George, 4,201,597, Cl. 134-167.00R.
Revermann, Mike; and Spector, George, 4,201,387, Cl. 273-243.000.
Williams, Smith J.; and Spector, George, 4,201,412, Cl. 296-163.000.
Spencer, Bette M.: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,201,639, Cl. 204-158.00R.
Sperry Corporation: *See*—
Gilligan, Lawrence H.; and Hermansdorfer, James E., 4,202,014, Cl. 358-228.000.
McMahon, Donald H.; and Soref, Richard A., 4,201,442, Cl. 350-96.140.
Sperry Rand Corporation: *See*—
Breeden, Robert H.; Farrell, Robert G.; and Taylor, Henry D., 4,201,052, Cl. 60-445.000.
Geffon, Arthur P.; and Jacoby, George V., 4,202,017, Cl. 360-45.000.
Popoff, Paul M.; Lee, Siu K.; and Touchton, James J., 4,202,019, Cl. 360-51.000.
Spes, Hellmuth: *See*—
Deinhammer, Wolfgang; and Spes, Hellmuth, 4,201,715, Cl. 260-345.70R.
Spiselman, Joseph W.: *See*—
Livaudais, Frank B., Jr.; and Spiselman, Joseph W., 4,201,791, Cl. 424-358.000.
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Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.
Springer, Hartmut: *See*—
Feess, Erich; Springer, Hartmut; Karacsonyi, Paul; Gronen, Willy; and Curtius, Horst, 4,201,547, Cl. 8-543.000.
Stahl, Alfred R., to Breston, Michael P., a part interest. Fluid-operated press. 4,201,130, Cl. 100-271.000.
Stanadyne, Inc.: *See*—
Overfield, Norbert W., 4,201,170, Cl. 123-139.0BD.
Standard Oil Company (Indiana): *See*—
Sabol, Albert R.; Petrille, Dennis G.; and Heffern, Edward W., 4,201,682, Cl. 252-33.400.
Standard Precision, Inc.: *See*—
Hagen, Magnus F.; and Stanley, Donald, 4,201,423, Cl. 308-6.00R.
Stanford, George H. Snow plow attachment. 4,201,000, Cl. 37-117.500.
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Hagen, Magnus F.; and Stanley, Donald, 4,201,423, Cl. 308-6.00R.
Stanley Works, The: *See*—
Elmore, I. James; and West, Robert F., 4,201,258, Cl. 145-46.000.
West, Robert F.; and Elmore, James, 4,200,983, Cl. 33-138.000.
West, Robert F., 4,200,990, Cl. 33-476.000.
Stecher, Friedhelm; Fazekas, Josef; Johren, Paul; and Morsbach, Martin, to Goetzewerke Friedrich Goetze AG. Gasket impregnated with a polymerizable liquid and method for its manufacture. 4,201,804, Cl. 427-393.600.
Steed, Van E.: *See*—
Campion, John S.; and Steed, Van E., 4,201,449, Cl. 350-117.000.
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Bierig, Robert W.; and Steele, S. Robert, 4,201,604, Cl. 148-175.000.
Stein, William W., to Tektronix, Inc. Cathode ray tube having image transfer means. 4,201,996, Cl. 346-158.000.
Stemme, Otto; and Wagner, Karl, to AGFA-Gevaert, A.G. Motor-driven still camera. 4,201,460, Cl. 354-171.000.
Stenild, Eddie. Self-propelled irrigation system. 4,201,343, Cl. 239-189.000.
Stephens, Charles E. Refinish painting apparatus. 4,201,799, Cl. 427-142.000.
Stephens, Geoffrey B.: *See*—
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Sternik, Jury L.: *See*—
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Stetter, Joseph R., to Energetics Science, Inc. Method for the detection of hydrazine. 4,201,634, Cl. 204-1.00T.
Stevens, Vernon C., to Ohio State University, The. Antigenic modification of polypeptides. 4,201,770, Cl. 424-177.000.
Stevenson, Alden. Recirculating fluid pump control system. 4,201,518, Cl. 417-12.000.
Stewart, Charles C.; Avidor, Joel M.; Pugh, Evan R.; and Lothrop, John W. Gas laser aerodynamic window. 4,201,952, Cl. 331-94.50D.
Steyr-Daimler-Puch Aktiengesellschaft: *See*—
Matthias, Jan H., 4,201,397, Cl. 280-280.000.
Meier, Karl, 4,201,398, Cl. 280-289.00L.
Stibbe, Paul H.; and Daane, Robert A., to W. R. Grace & Co. High velocity web floating air bar having a recessed Coanda plate. 4,201,323, Cl. 226-97.000.
Stock, Don J. R.: *See*—
Kienberger, Karl-Heinz; and Stock, Don J. R., 4,201,956, Cl. 331-96.000.
Stockham, Thomas G., Jr., to Soundstream, Inc. Apparatus and method for providing error recognition and correction of recorded digital information. 4,202,018, Cl. 360-47.000.
Stone, Bobbie D.: *See*—
Burd, John W.; Stone, Bobbie D.; Tucker, William F.; and Gupta, Kedar P., 4,201,746, Cl. 422-250.000.
Stover, Edward R., to United States of America, Air Force. Carbon/-carbon composite for re-entry vehicle applications. 4,201,611, Cl. 156-155.000.
Stram, George H., to Weldon Hydraulics, Inc. Mobile refractory apparatus for repairing interior furnace walls. 4,201,342, Cl. 239-128.000.
Straub, Paul; and Jost, Heinrich, to Gebrueder Buehler AG. Drag chain conveyor. 4,201,287, Cl. 198-530.000.
Strobel, Stanley W., to Royco Instruments, Inc. Apparatus and method utilizing calculator for quality control of hematology sample analysis. 4,202,033, Cl. 364-416.000.
Strzepek, Adolph A.: *See*—
Church, John A.; Wooldridge, Derek; Burroughs, Reginald L.; Strzepek, Adolph A.; and Thompson, William J., 4,201,596, Cl. 127-37.000.
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Stump, Lee K., to Ausherman Manufacturing Co., Inc. Ammonia applicator blade. 4,201,142, Cl. 111-7.000.
Subramanian, Kojur N.; Nissen, Norman C.; and Thomas, John A., to International Nickel Co., Inc., The. Nickel recovery from sulfur-deficient mattes. 4,201,648, Cl. 204-112.000.
Suchanek, Jaroslav. Long-distance truck tractor with living quarters. 4,201,415, Cl. 296-190.000.
Suchy, Milos, to Hoffmann-La Roche Inc. Cyclopropanecarboxylic acid naphthylmethyl ester. 4,201,789, Cl. 424-305.000.
Suda, Seiji: *See*—
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Sudler, Roland; and Happel, Walter, to Quarz-Zeit AG. Single phase stepping motor. 4,201,929, Cl. 310-49.00R.
Sugawara, Tamio: *See*—
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Sugio, Akitoshi: *See*—
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Sugiura, Noboru: *See*—
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Sugiura Seisakusho Co. Ltd.: *See*—
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Sugiura, Toshio: *See*—
Hanai, Kiyoshi; and Sugiura, Toshio, 4,201,110, Cl. 85-32.00R.
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., to Institut Organicheskogo Sinteza Akademii Nauk Latviiskoi SSR. Substituted 2-[2'-(5''-nitrofuryl-2'')vinyl-and 4'-(5''-nitrofuryl-2''-1,3-butadieryl]quinoline-4-carboxylic acid amides and salts thereof. 4,201,784, Cl. 424-258.000.
Sulby Engineering Development Company Limited, The: *See*—
French, Lionel J. B. R., 4,201,615, Cl. 156-304.000.
Sullivan, Charles I.: *See*—
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Sulzer Brothers Limited: *See*—
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Sumitani, Kenji, to Kawakami Kagaku Kogyo Company Ltd. Powder composition for soft drink. 4,201,794, Cl. 426-96.000.

Sumitomo Aluminium Smelting Company, Ltd.: *See—*
Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,201,749, Cl. 423-127.000.
Sumitomo Metal Industries, Ltd.: *See—*
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Nagano, Hiroo; Fukuda, Takashi; Nagai, Hiroshi; and Nakamura, Yasuyuki, 4,201,650, Cl. 204-209.000.
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Sumner, Barbara E., to United States of America, Army. Method for making epitaxial silicon crystals with uniform doping levels. 4,201,623, Cl. 156-622.000.
Sun, Kwok K., to Upjohn Company, The. Process for separating 4,4'-diaminodiphenylmethane. 4,201,722, Cl. 260-570.00D.
Sun Oil Company of Pennsylvania: *See—*
Lyons, James E.; Schneider, Abraham; and Myers, Harry K., Jr., 4,201,731, Cl. 585-361.000.
Sundstrand Data Control, Inc.: *See—*
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Suntech, Inc.: *See—*
Seitzer, Walter H., 4,201,761, Cl. 423-633.000.
Surgical Appliance Industries, Inc.: *See—*
Applegate, Leslie T., 4,201,203, Cl. 128-80.00C.
Sutrak Transportkalte, GmbH & Co.: *See—*
Krug, Martin; and Bihl, Paul R., 4,201,064, Cl. 62-239.000.
Suttles, James M., to Mead Corporation, The. Shelving system. 4,201,139, Cl. 108-109.000.
Suzuki, Eiji. Vibration responsive mechanism. 4,201,536, Cl. 431-88.000.
Suzuki, Kohji: *See—*
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Swinkels, Godefridus M.; and Maschmeyer, Dennis G., to Cominco Ltd.; and Sherritt Gordon Mines Limited. Process for thermal-activation of chalcopyrite-pyrite concentrates. 4,201,748, Cl. 423-27.000.
Szabados, Andreas. Sound insulated target apparatus with projectile butt container. 4,201,385, Cl. 273-102.400.
Szeberenyi, Szaboles: *See—*
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Szporny, Laszlo: *See—*
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Tachibana, Masahiro: *See—*
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Taidisha Ltd.: *See—*
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Takechi, Sadatoshi: *See—*
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Tamaoku, Katsuki; Nakahara, Keishi; Sumiyoshi, Hideo; and Tachibana, Masahiro, to Dojindo Laboratory & Co., Ltd. Method for determining volatile substances in an aqueous solution and apparatus therefor. 4,201,548, Cl. 23-230.00R.
Tanaka, Kazuyuki; Kobayashi, Kazuo; Okabe, Itsuro; and Tanaka, Toshimitsu, to Toyo Kogyo Co., Ltd. Cylinder head construction. 4,201,175, Cl. 123-191.00M.
Tanaka, Masami; and Nomura, Yukihiko, to Alps Electric Co., Ltd. Variable resistor and switch assembly. 4,201,969, Cl. 338-180.000.
Tanaka, Takashi: *See—*
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Tanaka, Tomoyuki; Shirasawa, Toshikatsu; and Okamura, Masahiro, to Hitachi, Ltd. Electron irradiation process of glass passivated semiconductor devices for improved reverse characteristics. 4,201,598, Cl. 148-1.500.
Tanaka, Toshiaki; and Etoh, Yukihiro, to Nissan Motor Company, Limited. Internal combustion engine with dual induction system and with EGR system. 4,201,165, Cl. 123-119.00A.
Tanaka, Toshimitsu: *See—*
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Tanaka, Toyonaru, to Jeco Company Limited. Digital electronic timepiece having a time correcting means. 4,201,041, Cl. 368-85.000.
Tanaka, Yoko: *See—*
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Tano, Eiichi: *See—*
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Tanouchi, Masatoshi; Takeuchi, Hiroshi; Ban, Kazuki; and Asahina, Yoshiyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for recovering terephthalic acid. 4,201,871, Cl. 562-486.000.
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Tarusawa, Yasutaka, to Kabushiki Kaisha Suwa Seikosha. Wristwatch calculator imput key positioning assembly. 4,201,043, Cl. 368-10.000.
Taylor, Donald F., to Otis Engineering Corporation. Radially expandable tubular valve seal. 4,201,364, Cl. 251-175.000.
Taylor, Henry D.: *See—*
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Telescope Folding Furniture Co., Inc., The: *See—*
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Tenna Corporation: *See—*
Nagel, Martin J., 4,201,886, Cl. 179-1.00A.
Teodorescu, Constantin; and Polizu, Radu, to Institutul National Pentru Creatie Stiintifica si Tehnica-Increst. Method of and apparatus for incinerating residential waste. 4,201,141, Cl. 110-259.000.
Tepe, Walter; and Van Niewenhuizen, Adam J. J., to Dialytic Electrolysis Laboratorium (Proprietary) Limited. Soil testing apparatus and method. 4,201,549, Cl. 23-230.00R.
Teradyne, Inc.: *See—*
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Terumo Corporation: *See—*
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Vartanian, Paul F.; and Biasotti, Joseph B., 4,201,554, Cl. 44-62.000.

Texas Instruments Incorporated: *See—*
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Tezuka, Tohru: *See—*
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Themy, Constantinos D. Electrolysis cell. 4,201,651, Cl. 204-217.000.

Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, to Continental Oil Company. Process for making metallurgical coke. 4,201,655, Cl. 208-8.0LE.

Thermo Electron Corporation: *See—*
Sakhuja, Ravinder K., 4,201,195, Cl. 126-449.000.

Thirion, Philippe E.: *See—*
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Thomas, Harold T.; Howe, Dennis G.; and Lee, James K., to Eastman Kodak Company. Method of providing close contact for contact printing. 4,201,581, Cl. 430-396.000.

Thomas, Harold W.: *See—*
Depas, Laddie A., Sr., 4,201,422, Cl. 303-10.000.

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Thomas, John A.: *See—*
Subramanian, Kojur N.; Nissen, Norman C.; and Thomas, John A., 4,201,648, Cl. 204-112.000.

Thomason, James M.; and Logan, Francis D., to Camco, Incorporated. Sidepocket mandrel and method of making. 4,201,265, Cl. 166-117.500.

Thompson, George H. B.; and Selway, Peter R., to International Standard Electric Corporation. Termination for graded index fiber. 4,201,447, Cl. 350-96.310.

Thompson, William J.: *See—*
Church, John A.; Wooldridge, Derek; Burroughs, Reginald L.; Strzepek, Adolph A.; and Thompson, William J., 4,201,596, Cl. 127-37.000.

Thomsen, Ove; and Bondpers, Per-Erik, to A-Betong AB. Method of manufacturing prestressed construction elements in a long mould bed. 4,201,711, Cl. 264-157.000.

Thomson-CSF: *See—*
Carballes, Jean-Claude, 4,202,000, Cl. 357-19.000.
Ducrocq, Paul, 4,201,986, Cl. 343-14.000.
Hareng, Michel; and Le Berre, Serge, 4,202,010, Cl. 358-56.000.
Le Cardonnel, Gerard, 4,202,025, Cl. 361-103.000.

Tice, Lee D.: *See—*
Skutta, Frank R.; and Tice, Lee D., 4,201,960, Cl. 333-17.00M.

TII Industries, Inc.: *See—*
Simokat, Frank L., 4,202,024, Cl. 361-91.000.

Timofeev, Vladimir P.: *See—*
Chumanov, Julian M.; Klimenko, Valentin M.; Shulgin, Grigory M.; Gubaidulin, Vyacheslav F.; Timofeev, Vladimir P.; Slednev, Vladimir P.; Ignatiev, Stanislav N.; Levichev, Pavel A.; and Lyashenko, Jury P., 4,201,075, Cl. 72-204.000.

Tjan, Petrus W. H. L.: *See—*
Kwant, Pieter B.; Kanbier, Dirk; Tjan, Petrus W. H. L.; and Akbar, Mohammed, 4,201,659, Cl. 208-73.000.

Tjunkin, Boris A.: *See—*
Likholai, Vasily K.; and Tjunkin, Boris A., 4,201,420, Cl. 299-2.000.

Tkach, Joseph. Method and apparatus for degasification of liquid by induced vortexing. 4,201,555, Cl. 55-20.000.

Tobber, Arno W. Turbine power plant. 4,201,049, Cl. 60-325.000.

Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; Kasai, Akio; Kamiyama, Satoru; and Kawasaki, Toshihiro, to Shinto Paint Co., Ltd.; Honda Motor Co., Ltd.; and Taidisha Ltd. Replenishment of electrodeposition coating bath. 4,201,644, Cl. 204-181.00C.

Toganou, Shigeo: *See—*
Matsumoto, Masakazu; Yokono, Koujiro; Tanaka, Takashi; Toganou, Shigeo; Kishi, Hiroyoshi; and Nishide, Katsuhiko, 4,201,441, Cl. 350-3.610.

Tokai Seiki Co., Ltd.: *See—*
Nitta, Tomio, 4,201,537, Cl. 431-344.000.

Tokes, Szabolcs: *See—*
Vadasz, Peter; Tokes, Szabolcs; Markus, Attila L.; Balazs, Karoly; Polya, Endre; Taller, Andras; and Podmaniczky, Andras, 4,201,455, Cl. 350-358.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Aoyama, Masaharu; Hiraki, Shunichi; and Yonezawa, Toshio, 4,200,969, Cl. 29-577.00R.

Tolliver, Richard J., to PPG Industries, Inc. Cutting stretched interplayer sheeting. 4,201,351, Cl. 242-56.00B.

Tomita, Masatsugu; Takase, Yoshiyuki; and Komiya, Toshio, to Dainippon Pharmaceutical Co., Ltd. Substituted 7[s-oxopyrido[2,3-d]pyrimidine carboxamido acetamido]cephalosporins. 4,201,781, Cl. 424-246.000.

Tonomura, Shinji: *See—*
Okamoto, Shosuke; Hijikata, Akiko; Kikumoto, Ryoji; Tamao, Yoshikuni; Ohkubo, Kazuo; Tezuka, Tohru; and Tonomura, Shinji, 4,201,863, Cl. 546-166.000.

Torley, Jozsef: *See—*
Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szaboles; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, 4,201,723, Cl. 260-570.0AB.

Tornqvist, Erik G. M.; and Gessler, Albert M., to Exxon Research & Engineering Co. Stereoregulated copolymers of butadiene and piperylene. 4,201,850, Cl. 526-337.000.

Toro Company, The: *See—*
Lichte, Leo J., 4,201,344, Cl. 239-242.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Manabe, Takao; Matunaga, Shigetugu; and Machi, Shinji, 4,201,144, Cl. 112-121.120.

Toshiba Ray-O-Vak K.K.: *See—*
Gotoda, Masao; Okada, Toshio; Murata, Kazuo; and Takahashi, Kusuhiko, 4,201,641, Cl. 204-159.170.

Toth, Edit; Torley, Jozsef; Palosi, Eva; Szeberenyi, Szaboles; Szporny, Laszlo; Gorog, Sandor; and Meszaros, Csilla, to Richter Gedeon Vegyeszeti Gyar Rt. Diamine-benzophenones and a process for the preparation thereof. 4,201,723, Cl. 260-570.0AB.

Toth, William E.: *See—*
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202,034, Cl. 364-420.000.
Bowditch, Philip N.; Dahlen, John M.; McKenna, John F., Jr.; Shillingford, John T., Jr.; Siraco, Frank J.; and Toth, William E., 4,202.036, Cl. 364-420.000.

Touchton, James J.: *See—*
Popoff, Paul M.; Lee, Siu K.; and Touchton, James J., 4,202,019, Cl. 360-51.000.

Towell, Billy H.: *See—*
Calderon, Reynaldo; and Towell, Billy H., 4,201,266, Cl. 166-231.000.

Townsend, Paul R., to Codman & Shurtleff, Inc. Surgical tool. 4,201,213, Cl. 128-312.000.

Toyo Kogyo Co., Ltd.: *See—*
Tanaka, Kazuyuki; Kobayashi, Kazuo; Okabe, Itsuro; and Tanaka, Toshimitsu, 4,201,175, Cl. 123-191.00M.

Toyo Soda Manufacturing Co. Ltd.: *See—*
Miyanohara, Isao; Miyazaki, Hiroshi; and Kawamura, Hideo, 4,201,668, Cl. 210-51.000.

Toyo Suisan Kaisha, Ltd.: *See—*
Yamanaka, Kenji, 4,201,795, Cl. 426-110.000.

Toyota, Akira; Nozawa, Katsumi; and Nomura, Hideo, to Taisan Industrial Co., Ltd. Boost-retarding device for electromagnetic plunger pump and the like. 4,201,522, Cl. 417-311.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Fukuma, Nobuo; and Kato, Yoshito, 4,201,935, Cl. 318-15.000.
Hanai, Kiyoshi; and Sugiura, Toshio, 4,201,110, Cl. 85-32.00R.
Kimura, Masayuki, 4,202,030, Cl. 362-61.000.
Morinaga, Masaru, 4,201,078, Cl. 73-12.000.
Ohnishi, Takanori; Shiozawa, Ken; and Shimizu, Nobuo, 4,201,734, Cl. 261-34.00B.

Tracy, Clarence J.: *See—*
Robinson, Frederick J.; and Tracy, Clarence J., 4,201,579, Cl. 430-323.000.

Trager, Seymour F.; and Green, Keith, to Burton, Parsons & Company, Inc. Treatment of corneal edema. 4,201,706, Cl. 424-78.000.

Transworld Drilling Company: *See—*
Cox, John W., 4,201,074, Cl. 72-168.000.

Trapani, Giorgio B., to Polaroid Corporation. Rigid electro-optic device using a transparent ferroelectric ceramic element. 4,201,450, Cl. 350-150.000.

Trella, Phyllis L. Joint construction for skeletal model. 4,200,995, Cl. 35-17.000.

Tressel, Willard. Contact lens insertion and removal device. 4,201,408, Cl. 294-1.0CA.

Triad Associates: *See—*
Seale, Glenn C.; and Frame, George L., 4,201,386, Cl. 273-236.000.

Tricoles, Gus P.; and Rope, Eugene L., to United States of America, Navy. Method for determining antenna near-fields from measurements on a spherical surface. 4,201,987, Cl. 343-703.000.

Triebel, Wolfgang; Hari, Siegfried; Koert, Hubert; and Evers, Fritz, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler; and Evers, Fritz. Impact resistant safety glass panel. 4,201,828, Cl. 428-332.000.

Trietley, Harry L., Jr., to Yellow Springs Instrument Company, Inc. Differential measuring system. 4,201,088, Cl. 73-342.000.

Troller Corporation: *See—*
Morez, Gene, 4,202,032, Cl. 363-126.000.

Tromborg, Erik T.: *See—*
Bursack, William W.; and Tromborg, Erik T., 4,201,913, Cl. 250-288.000.

Tronc, Dominique; and Levaillant, Claude, to C.G.R. MeV. Apparatus for irradiating a target on two opposite faces by means of an accelerated charged particle beam. 4,201,920, Cl. 250-492.00B.

Troxell, John N., Jr., to Cameron Iron Works, Inc. Pressure relief valve. 4,201,242, Cl. 137-531.000.

Truhan, Andrew. Sawdust collector. 4,201,256, Cl. 144-252.00A.

Truly Magic Products, Inc.: *See—*
Kohler, Henry A., 4,201,491, Cl. 401-264.000.

Truth Incorporated: *See—*
Dewitte, Jean; and Aymard, Pierre, 4,201,560, Cl. 65-21.000.

TRW Inc.: *See*—
Carlson, Robert E., 4,201,521, Cl. 417-53.000.
Hodge, Malcolm H., 4,201,443, Cl. 350-96.200.
Sanders, Paul W., 4,202,005, Cl. 357-51.000.
Tseng, Ching Y.: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.
Tsien, Hsue C.: *See*—
Asher, William J.; and Tsien, Hsue C., 4,201,691, Cl. 252-314.000.
Tsuji, Nobuo: *See*—
Sakaguchi, Shinji; Kubodera, Seiiti; Arakawa, Jun; Shiba, Keisuke; and Tsuji, Nobuo, 4,201,589, Cl. 430-139.000.
Tsuyama Manufacturing Company, Ltd.: *See*—
Kagayama, Joe, 4,201,448, Cl. 350-99.000.
Tucker, John E.: *See*—
Slepak, Bernard; Tucker, John E.; and Heinrich, William P., 4,201,080, Cl. 73-73.000.
Tucker, William F.: *See*—
Burd, John W.; Stone, Bobbie D.; Tucker, William F.; and Gupta, Kedar P., 4,201,746, Cl. 422-250.000.
Tung, Lu H.; Lo, Grace Y-S.; Rakshys, Joseph W.; and Beyer, Douglas E., to Dow Chemical Company, The. Multifunctional lithium containing initiator. 4,201,729, Cl. 260-665.00R.
Tureck, Albert. Photographic extension flash cord. 4,201,434, Cl. 339-28.000.
Turene, Frank E.: *See*—
Howard, James K.; Turene, Frank E.; and White, James F., 4,201,999, Cl. 357-15.000.
Turner, Donald M.: *See*—
Iddon, Michael I.; and Turner, Donald M., 4,201,481, Cl. 366-79.000.
Turner, James F 'ndex tab device and index tab therefor. 4,201,403, Cl. 283-21.000.
Tyrer, Philip G.; and Pluck, John, to Pyroban Limited. Engine flameproofing. 4,201,178, Cl. 123-198.00D.
Udo, Henry D.; and Pickett, Lawrence F. Video projection system. 4,202,015, Cl. 358-237.000.
Uede, Hisashi: *See*—
Inami, Yasuhiko; Takechi, Sadatoshi; Hishida, Tadanori; Uede, Hisashi; and Take, Hiroshi, 4,201,984, Cl. 340-763.000.
Ueno, Yoshiki: *See*—
Hattori, Tadashi; Nishida, Minoru; Ueno, Yoshiki; Makita, Kunio; and Kurii, Masaaki, 4,201,163, Cl. 123-117.00R.
Uhl, Karl: *See*—
Koester, Eberhard; Deigner, Paul; Falk, Roland; Uhl, Karl; Schaefer, Dieter; Mayer, Dieter; Motz, Herbert; and Felleisen, Peter, 4,201,149, Cl. 118-52.000.
Schoettle, Klaus; Uhl, Karl; Wittkamp, Heinrich; Dobler, Peter; and Lewin, Helmut, 4,201,356, Cl. 242-197.000.
Ullman, Myron E., Jr., to M.M.G., Inc. Hinge, handle and detent. 4,200,956, Cl. 16-130.000.
Ulveling, Leon; Mailliet, Pierre; and Metz, Jean, to Paul Wurth-S.A. Guiding and positioning mechanism for a plugging or drilling device. 4,201,373, Cl. 266-271.000.
Underwood, J. Larry. Container and lid of molded plastic material. 4,201,311, Cl. 220-307.000.
Unimation, Inc.: *See*—
Irie, Akiyoshi, 4,201,937, Cl. 318-568.000.
Union Carbide Corporation: *See*—
Cully, Maryann; Pines, Arthur N.; Metzler, Richard B.; and Babian, Gunther W., 4,201,808, Cl. 428-40.000.
Kaplan, Barbara W., 4,201,786, Cl. 424-282.000.
Kosseim, Alexander J. M.; Atwood, Gilbert R.; and Sokolik, Joseph E., Jr., 4,201,752, Cl. 423-235.000.
Union Oil Company of California: *See*—
Outmans, Harry D., 4,201,060, Cl. 60-641.000.
Pye, David S.; and Fischer, Paul W., 4,201,678, Cl. 252-8.50A.
Uniroyal a Societe Anonyme: *See*—
Mirtain, Henri J.; Shichman, Daniel; and Neville, James J., 4,201,260, Cl. 152-361.0DM.
Uniroyal, Inc.: *See*—
Mirtain, Henri J.; Shichman, Daniel; and Neville, James J., 4,201,260, Cl. 152-361.0DM.
Unisearch Limited: *See*—
Matousek, Jaroslav P.; and Smythe, Lloyd E., 4,201,469, Cl. 356-36.000.
United Geophysical Corporation: *See*—
Edwards, Charles M.; and Fort, J. Robert, 4,201,972, Cl. 367-40.000.
Edwards, Charles M., 4,202,048, Cl. 367-40.000.
United Kingdom Atomic Energy Authority: *See*—
Holman, David J.; and James, Howard, 4,201,643, Cl. 204-180.00R.
Mills, Alfred L.; and Williams, John A., 4,201,690, Cl. 252-301.10W.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the: *See*—
Crawford, Henry; and Jessiman, Alexander F., 4,201,410, Cl. 294-83.00R.
United States Borax & Chemical Corp.: *See*—
Hunter, Don L.; and Woods, William G., 4,201,724, Cl. 260-577.000.
United States Gypsum Company: *See*—
O'Neill, Eugene E., 4,201,595, Cl. 106-109.000.
U.S. Industries: *See*—
Wollen, Carl H., 4,201,830, Cl. 428-375.000.
United States of America
Agriculture: *See*—
Hughes, David E.; and Pugh, George W., Jr., 4,201,210, Cl. 128-260.000.
Kadan, Ranjit S.; Freeman, Donald W.; Spadaro, James J.; and Ziegler, George M., Jr., 4,201,709, Cl. 260-123.500.
Air Force: *See*—
Castleman, B. Wayne, 4,201,654, Cl. 204-298.000.
Griffin, Warren R., 4,201,876, Cl. 568-677.000.
Stover, Edward R., 4,201,611, Cl. 156-155.000.
Army: *See*—
Barr, Thomas A., Jr.; Holloman, Miles E.; and Walters, Joseph M., 4,201,950, Cl. 331-94.50G.
Cowsar, Donald R., 4,201,822, Cl. 428-240.000.
Czerwinski, Watson P., 4,201,989, Cl. 343-715.000.
Figge, Irving E.; and Dean, Edward H., 4,201,612, Cl. 156-224.000.
Holl, Herbert B.; and Roberts, Thomas G., 4,201,474, Cl. 356-369.000.
Morris, George V., 4,201,136, Cl. 102-214.000.
Sumner, Barbara E., 4,201,623, Cl. 156-622.000.
Energy: *See*—
Christophorou, Loucas G.; McCorkle, Dennis L.; Maxey, David V.; and Carter, James G., 4,201,692, Cl. 252-372.000.
Evans, Michael L.; Menlove, Howard O.; and Baker, Michael P., 4,201,912, Cl. 250-253.000.
Johnson, David R., 4,201,738, Cl. 264-0.500.
Health, Education and Welfare: *See*—
Horton, Derek; Weckerle, Wolfgang; Fuchs, Ernst F.; Cheung, Tak M.; Winter, Beat; and Sorenson, Roderick J., 4,201,773, Cl. 424-180.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Salama, Amal M. Method of mitigating titanium impurities effects in p-type silicon material for solar cells. 4,201,622, Cl. 156-605.000.
Navy: *See*—
Chrisler, Vivian L., deceased; Gilbert, William H.; and Boyer, George L., 4,202,047, Cl. 367-1.000.
Connors, John P.; Nordmann, Bernard J.; Wainland, David M.; and Bell, Henry P., 4,202,042, Cl. 364-900.000.
Dilley, Douglas M., 4,201,988, Cl. 343-715.000.
Elton, Raymond C.; and Dixon, Robert H., 4,201,955, Cl. 331-94.50G.
Henry, Ronald A.; and Martin, Eugene C., 4,201,853, Cl. 528-85.000.
Lewis, Adolph L., 4,201,618, Cl. 156-380.000.
Reed, Russell, Jr.; Sieg, George F.; Rhyn, Elmer J.; and Waldon, Billy E., 4,201,605, Cl. 149-19.100.
Tricoles, Gus P.; and Rope, Eugene L., 4,201,987, Cl. 343-703.000.
Whitworth, Eddie L.; and Russell, Ronald G., 4,202,040, Cl. 364-900.000.
U.S. Philips Corporation: *See*—
Beunders, Johan W., 4,201,944, Cl. 455-155.000.
van der Wal, Johannes; and Bouwhuis, Gijsbertus, 4,201,954, Cl. 331-94.50C.
van Hattum, Johannes S. A.; and Korver, Jan A. C., 4,202,013, Cl. 358-158.000.
United States Steel Corporation: *See*—
Seaton, John J.; and Slagle, James K., 4,201,070, Cl. 72-42.000.
Slamar, Frank, 4,201,572, Cl. 75-60.000.
United Technologies Corporation: *See*—
De Negris, Michael A.; and Lees, Philip, 4,201,046, Cl. 60-39.370.
University of Michigan, The Regents of the: *See*—
Nace, George W., 4,201,153, Cl. 119-3.000.
Voorhees, John J.; and Russell, Diane H., 4,201,788, Cl. 424-304.000.
University Patents, Inc.: *See*—
Voorhees, John J.; and Russell, Diane H., 4,201,788, Cl. 424-304.000.
Uno, Naoyuki; Urano, Fumio; Tano, Eiichi; and Kurei, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Lens barrel having an aperture information transmission section. 4,201,462, Cl. 354-289.000.
UOP Inc.: *See*—
Asdigian, George, 4,201,626, Cl. 196-14.520.
Uphues, Gunter: *See*—
Waltenberger, Peter; Uphues, Gunter; and Petzold, Manfred, 4,201,680, Cl. 252-8.600.
Upjohn Company, The: *See*—
Nelson, Stephen J., 4,201,733, Cl. 260-968.000.
Peterson, David C., 4,201,873, Cl. 562-503.000.
Sun, Kwok K., 4,201,722, Cl. 260-570.00D.
Upp, Daniel C.: *See*—
Lawrence, Alan J.; Denenberg, Jeffrey N.; Rubinstein, Murray; and Upp, Daniel C., 4,201,890, Cl. 370-68.000.
Upton, Charles J.: *See*—
Crutchfield, Marvin M.; and Upton, Charles J., 4,201,858, Cl. 528-232.000.
Uram, Robert, to Westinghouse Electric Corp. Combined cycle electric power plant with a steam turbine having a sliding pressure main bypass and control valve system. 4,201,924, Cl. 290-40.00R.

Urano, Fumio: *See*—
Uno, Naoyuki; Urano, Fumio; Tano, Eiichi; and Kurei, Hiroshi, 4,201,462, Cl. 354-289.000.

Ushiyama, Yasuichi; and Yamamoto, Setsuo, to Nippon Electric Co., Ltd. Processing amplifier for three-tube color television camera. 4,202,009, Cl. 358-32.000.

Vadasz, Peter; Tokes, Szabolcs; Markus, Attila L.; Balazs, Karoly; Polya, Endre; Taller, Andras; and Podmaniczky, Andras, to MTA Szamitastechnikai es Automatizalasi Kutato Intezet. Laser-operated apparatus for data and signal recording. 4,201,455, Cl. 350-358.000.

Vajta, Zsofia: *See*—
Noszticzius, Zoltan; Patonay, Gabor; Palmai, Gyorgy; Olah, Karoly; Gaspar, Gyula; Szekely, Gyorgy; Vajta, Zsofia; Langer, Karoly; and Szommer, Ferenc, 4,201,550, Cl. 23-232.00E.

Valenta, Zdenek, to Hoffmann-La Roche Inc. 14β-Hydroxyandrostanes. 4,201,717, Cl. 260-397.450.

Vallejos, Tony E., to Alto Automotive, Inc. Rotary valve system for motors and the like having improved sealing means. 4,201,174, Cl. 123-188.00B.

Valo, Antti T. Timber processing machine. 4,201,257, Cl. 144-208.00E.

van Capelleveen, Pieter, to Gebr. van Capelleveen B.V. Link chain conveyor assembly. 4,201,288, Cl. 198-778.000.

Vande Kieft, Joseph A., to SCM Corporation. Process for manufacturing prefinished hardboard. 4,201,802, Cl. 427-370.000.

Vandeputte, Camille A.: *See*—
Pollet, Robert J.; Vandeputte, Camille A.; Sels, Francis J.; and van Veelen, George F., 4,201,585, Cl. 430-376.000.

Van der Loos, Hendrik: *See*—
Glaser, Edmund M.; and Van der Loos, Hendrik, 4,202,037, Cl. 364-518.000.

Vanderminden, Robert D., to Telescope Folding Furniture Co., Inc., The. Canopy construction for outdoor furniture. 4,201,416, Cl. 297-184.000.

van der Wal, Johannes; and Bouwhuis, Gijsbertus, to U.S. Philips Corporation. Gas discharge laser for generating linearly polarized radiation. 4,201,954, Cl. 331-94.50C.

Vanguard Manufacturing, Inc.: *See*—
Matejec, John K.; Lowry, Jerry D.; and Fulbright, Gene R. N., 4,201,395, Cl. 280-11.37M.

van Hattum, Johannes S. A.; and Korver, Jan A. C., to U.S. Philips Corporation. Line time base in television receiver. 4,202,013, Cl. 358-158.000.

Vani, Elo N.; and Kiscaden, Roy W., to Westinghouse Electric Corp. Fuel limiter for combustion turbines. 4,201,045, Cl. 60-39.09R.

Van Niewenhuizen, Adam J. J.: *See*—
Tepe, Walter; and Van Niewenhuizen, Adam J. J., 4,201,549, Cl. 23-230.00R.

Van Poucke, Raphael K.: *See*—
Monbaliu, Marcel J.; and Van Poucke, Raphael K., 4,201,584, Cl. 430-389.000.

van Sorge, Bernardus J., to General Electric Company. Preparation of ortho-alkylated phenols. 4,201,880, Cl. 568-804.000.

van Veelen, George F.: *See*—
Pollet, Robert J.; Vandeputte, Camille A.; Sels, Francis J.; and van Veelen, George F., 4,201,585, Cl. 430-376.000.

Varian Associates, Inc.: *See*—
Luscher, Paul E., 4,201,152, Cl. 118-712.000.

Vartanian, Paul F.; and Biasotti, Joseph B., to Texaco Inc. Fuel additive containing inner quaternary ammonium salt. 4,201,554, Cl. 44-62.000.

Vasconcellos, Stephen R.: *See*—
Rowell, Robert L.; and Vasconcellos, Stephen R., 4,201,552, Cl. 44-51.000.

Vaughan, Raymond C. Method and apparatus for generating steam. 4,201,058, Cl. 60-618.000.

Velsicol Chemical Corporation: *See*—
Belkind, Benjamin A., 4,201,568, Cl. 71-94.000.
Shukla, Jayendra G.; Smith, Ray E.; and Nicholson, Richard R., 4,201,677, Cl. 252-8.100.
Sienkowski, Kenneth J.; Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,201,593, Cl. 106-18.140.

Vergara, Ruben L. Orthopedic device for propping and aligning the vertex end point of a sunken nose. 4,201,201, Cl. 128-76.00C.

Verner, David A.; and Kipp, Henry A., to Egan Machinery Company. Apparatus for manufacturing tubular thermoplastic. 4,201,527, Cl. 425-72.00R.

Vernieres, Jean-Claude: *See*—
Pigerol, Charles; Eymard, Pierre; Vernieres, Jean-Claude; Werbenec, Jean-Pierre; and Epse Broll, Madeleine C., 4,201,725, Cl. 260-583.00H.

Vetco, Inc.: *See*—
Baugh, Benton F., 4,201,238, Cl. 137-68.00R.

Vetere, Alessandro: *See*—
Paret, Giancarlo; Vetere, Alessandro; and Iori, Giuseppe, 4,201,633, Cl. 203-58.000.

Vetter, Manfred. Arrangement for emergency opening a vehicle door. 4,201,368, Cl. 254-131.000.

Viering, Rudolf, to Pixyfoto GmbH. Single lens mirror reflex studio camera in which quick return mirror closes flash contact. 4,201,458, Cl. 354-136.000.

Villard, George: *See*—
Campbell, Gerald A.; Cohen, Hyman; Hamilton, Lewis R.; and Villard, George, 4,201,840, Cl. 430-17.000.

Villazor, Alfredo: *See*—
O'Neill, Charles E.; Ettel, Victor A.; Villazor, Alfredo; and Garritsen, Peter G., 4,201,653, Cl. 204-263.000.

Vinals, Joaquin: *See*—
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

Vinals, Joaquin F.: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,201,639, Cl. 204-158.00R.

Vines, James K., to Paraframe, Inc. Antenna structure assembled from separable parts. 4,201,991, Cl. 343-840.000.

Violland, Robert; and Lagasse, Alain, to Rhone-Poulenc Industries. Hydrophilic polyurethanes and their application as soil-release, anti-soil redeposition, and anti-static agents for textile substrates. 4,201,824, Cl. 428-262.000.

Visconti, Gerald; and Gilomen, Beat, to A. Schild S.A. Regulator for a timepiece movement. 4,201,042, Cl. 368-170.000.

Vock, Manfred H.: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred H.; and Shuster, Edward J., 4,201,639, Cl. 204-158.00R.
Light, Kenneth K.; Sanders, James M.; Vock, Manfred H.; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja D.; Tseng, Ching Y.; and Sprecker, Mark A., 4,201,697, Cl. 252-522.00R.

Vogt, Willy, to Bucher-Guyer AG. Arrangement for uniform filling of a mold cavity. 4,201,530, Cl. 425-260.000.

Voith Turbo GmbH & Co., KG: *See*—
Nixel, Fritz, 4,201,050, Cl. 60-357.000.

von Bonin, Wulf: *See*—
Kleimann, Helmut; von Bonin, Wulf; and Schneider, Heinz-Georg, 4,201,847, Cl. 521-172.000.

Voorhees, John J.; and Russell, Diane H., to University Patents, Inc.; and University of Michigan, The Regents of the. Process for alleviating proliferative skin diseases. 4,201,788, Cl. 424-304.000.

Voorheis, Temple S., to Coen Company, Inc. Flame forming burner. 4,201,539, Cl. 431-354.000.

Voronova, Valentina A.: *See*—
Sukhova, Nina M.; Lidaka, Marger J.; Voronova, Valentina A.; Zidermane, Aina A.; Kravchenko, Iya M.; Dauvarte, Anda Z.; Preisa, Ieva E.; and Meirena, Dainuvite V., 4,201,784, Cl. 424-258.000.

Vowell, David H. Word game. 4,201,389, Cl. 273-272.000.

Vrba, James J., to GTE Automatic Electric Laboratories Incorporated. Routinable clock circuit. 4,201,885, Cl. 375-106.000.

W. R. Grace & Co.: *See*—
Kehr, Clifton L.; Wood, Louis L.; Marans, Nelson S.; and Fulmer, Glenn E., 4,201,846, Cl. 521-137.000.
Stibbe, Paul H.; and Daane, Robert A., 4,201,323, Cl. 226-97.000.

WABING S.r.L.: *See*—
Betta, Walter, 4,201,369, Cl. 254-193.000.

Wacker-Chemie GmbH: *See*—
Deinhammer, Wolfgang; and Spes, Hellmuth, 4,201,715, Cl. 260-345.70R.

Wagner, Karl: *See*—
Stemme, Otto; and Wagner, Karl, 4,201,460, Cl. 354-171.000.

Waimer, Milo H.: *See*—
Fredin, Ell C.; Morgan, James W.; and Waimer, Milo H., 4,200,943, Cl. 7-100.000.

Wainland, David M.: *See*—
Connors, John P.; Nordmann, Bernard J.; Wainland, David M.; and Bell, Henry P., 4,202,042, Cl. 364-900.000.

Wakabayashi, Hiroharu: *See*—
Niiro, Yasuhiko; and Wakabayashi, Hiroharu, 4,201,959, Cl. 333-16.000.

Wakamatsu, Hisato: *See*—
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Walch, John W.: *See*—
Irelan, Edward A.; Bartlett, Robert L.; and Walch, John W., 4,200,978, Cl. 30-276.000.

Waldon, Billy E.: *See*—
Reed, Russell, Jr.; Sieg, George F.; Rhyn, Elmer J.; and Waldon, Billy E., 4,201,605, Cl. 149-19.100.

Walker, Ronald E., to Weyerhaeuser Company. Apparatus for proportioning and mixing powdered hardeners with liquid resins. 4,201,485, Cl. 366-156.000.

Walling, Jorg-Hein; and Bouffard, Jean, to Northern Telecom Limited. Powder distributor for filling a cable. 4,201,250, Cl. 141-250.000.

Wallshein, Melvin. Orthodontic biassing device with screw disengagement preventing means. 4,200,979, Cl. 433-7.000.

Walsh, David E., to General Nutrition Corporation. Food retailing grinding machine. 4,201,349, Cl. 241-247.000.

Waltenberger, Peter; Uphues, Gunter; and Petzold, Manfred, to Henkel Kommanditgesellschaft auf Aktien. Smoothing agents for treating textile fiber material. 4,201,680, Cl. 252-8.600.

Walter Kidde & Co., Inc.: *See*—
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Walter, Lothar: *See*—
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,282, Cl. 192-98.000.
Ernst, Horst M.; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,201,424, Cl. 308-6.00C.

Walters, Ian R.; and Emblem, Harold G., to Zirconal Processes Limited. Method for making refractory articles. 4,201,594, Cl. 106-38.350.

Walters, Joseph M.: *See*—
Barr, Thomas A., Jr.; Holloman, Miles E.; and Walters, Joseph M., 4,201,950, Cl. 331-94.50G.
Wan, Jeffrey K. S.; and Chen, Kuang S., to Queen's University at Kingston. Triple ions of 1,2- and 1,4-dicarbonyl compounds and analogs thereof containing nitrogen and containing two strategic oxygen or nitrogen groups and process for producing same. 4,201,638, Cl. 204-158.00R.
Wantling, Steven J.: *See*—
Lipinski, Henry F.; and Wantling, Steven J., 4,201,681, Cl. 252-33.200.
Ward, William P., to NCR Corporation. Data storage system for storing multilevel signals. 4,202,046, Cl. 365-222.000.
Ward, William P.: *See*—
Lewis, Wayne J.; and Ward, William P., 4,201,337, Cl. 235-303.200.
Warner Electric Brake & Clutch Company: *See*—
MacDonald, J. G. Fraser, 4,201,281, Cl. 192-35.000.
Warner & Swasey Company, The: *See*—
Kirk, Calvin K.; Joyce, Glover C.; and Messier, Francis L., 4,201,016, Cl. 51-105.0SP.
Warren, Glenn B.; and Morgan, J. Randolph. Low emission combustors. 4,201,047, Cl. 60-39.630.
Warren, Raymond: *See*—
Arnold, Robert A.; and Warren, Raymond, 4,201,504, Cl. 414-27.000.
Washburn, William L.: *See*—
Feldman, Henry L.; Berman, Philip G.; and Washburn, William L., 4,201,218, Cl. 128-402.000.
Wasson, George E.: *See*—
Theodore, Frank W.; Wasson, George E.; Jasulaitis, William A.; and Gorin, Everett, 4,201,655, Cl. 208-8.0LE.
Watanabe, Hideo: *See*—
Nagase, Tetsuo; Watanabe, Hideo; and Inomata, Akira, 4,202,021, Cl. 360-96.500.
Watanabe, Masaki: *See*—
Kawashima, Yoshinori; Watanabe, Masaki; and Kinoshita, Katsuharu, 4,201,393, Cl. 277-92.000.
Watt, William R., to American Can Company. Method for producing bis-[4-(diphenylsulfonio)phenyl] sulfide bis-$M.X_6$ initiator and method for cationic polymerization of monomer formulations using same. 4,201,640, Cl. 204-159.110.
Watts, James T., to Grant Oil Tool Company. High and low pressure seal. 4,201,392, Cl. 277-165.000.
Watts, Paul J.; Crawford, Lynn D.; and Nichols, Philip T. Pivotal frame structure for collapsible umbrella type tent. 4,201,237, Cl. 135-2.000.
Waymouth, John F.; Bouchard, Andre C.; Fowler, Richard A.; and Hall, Harold H., Jr., to GTE Sylvania Incorporated. Percussively ignited photoflash lamp and method of making same. 4,201,540, Cl. 431-361.000.
Weber, Karl-Heinz; Bauer, Adolf; and Langbein, Adolf, to Boehringer Ingelheim GmbH. Process for preparation of 6-aryl-4H-s-triazolo-[3,4-c]-thieno-[2,3-e]-1,4-diazepines. 4,201,712, Cl. 260-244.400.
Weckerle, Wolfgang: *See*—
Horton, Derek; Weckerle, Wolfgang; Fuchs, Ernst F.; Cheung, Tak M.; Winter, Beat; and Sorenson, Roderick J., 4,201,773, Cl. 424-180.000.
Wegener, Walter: *See*—
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Wehrmann, Felix: *See*—
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Weidman, Larry G., to Geo. P. Reintjes Co., Inc. Air cooled head for stud welding gun. 4,201,904, Cl. 219-98.000.
Weiland, Emil; Schindler, Rudolf; and Brunsch, Klaus, to Messerschmitt-Bolkow-Blohm GmbH. Shear transfer element. 4,201,815, Cl. 428-113.000.
Weinheimer, Hans-Richard: *See*—
Kurbitz, Gunther; Wegener, Walter; and Weinheimer, Hans-Richard, 4,201,931, Cl. 315-10.000.
Weldon Hydraulics, Inc.: *See*—
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Wellman, George R.: *See*—
Filan, John J.; Holl, Walter W.; and Wellman, George R., 4,201,775, Cl. 424-180.000.
Wells, David L.: *See*—
Davida, George I.; and Wells, David L., 4,202,051, Cl. 375-2.000.
Wells, Willis L.: *See*—
Aldag, John; and Wells, Willis L., 4,201,021, Cl. 52-93.000.
Welti, George R., to Communications Satellite Corporation. 3-Position, 4-port waveguide switch. 4,201,963, Cl. 333-106.000.
Welti, George R., to Communications Satellite Corporation. Multibeam communications satellite. 4,201,992, Cl. 343-840.000.
Wennemann, Dietmar: *See*—
Scheidler, Herwig; Wennemann, Dietmar; and Schwank, Bernd, 4,201,184, Cl. 126-39.00J.
Werbenec, Jean-Pierre: *See*—
Pigerol, Charles; Eymard, Pierre; Vernieres, Jean-Claude; Werbenec, Jean-Pierre; and Epse Broll, Madeleine C., 4,201,725, Cl. 260-583.00H.
West Electric Co., Ltd.: *See*—
Esaki, Koreaki, 4,201,934, Cl. 315-151.000.
West, Robert F.; and Elmore, James, to Stanley Works, The. Self-extending rule. 4,200,983, Cl. 33-138.000.
West, Robert F., to Stanley Works, The. Metric rafter square and method of using same. 4,200,990, Cl. 33-476.000.
West, Robert F.: *See*—
Elmore, I. James; and West, Robert F., 4,201,258, Cl. 145-46.000.
Western Electric Company, Incorporated: *See*—
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Westinghouse Electric Corp.: *See*—
De Laurentis, Angelo A., 4,201,966, Cl. 336-217.000.
Klein, Gerald I., 4,201,961, Cl. 333-24.100.
Reed, Terry J.; and Smith, Jack R., 4,201,923, Cl. 290-40.00R.
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Vani, Elo N.; and Kiscaden, Roy W., 4,201,045, Cl. 60-39.09R.
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Westvaco Corporation: *See*—
Gilbert, Earl F., 4,201,330, Cl. 229-33.000.
Wetherald, Milo N. Oscillating flasher for deep water fishing. 4,201,006, Cl. 43-42.060.
Wetzel, Gustav, to Endress u. Hauser GmbH u. Co. Ultrasonic-filling position limit switch operating according to the echo principle. 4,202,049, Cl. 367-96.000.
Weyerhaeuser Company: *See*—
Walker, Ronald E., 4,201,485, Cl. 366-156.000.
White Consolidated Industries, Inc.: *See*—
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White, James F.: *See*—
Howard, James K.; Turene, Frank E.; and White, James F., 4,201,999, Cl. 357-15.000.
White, Richard L., to Eastman Kodak Company. Photothermographic and thermographic element, composition and process. 4,201,582, Cl. 430-351.000.
Whitehead, Gareth D. J.; and Gardner, Thomas H. Apparatus for the compacting and treatment of materials such as shredded paper. 4,201,128, Cl. 100-45.000.
Whiteley, Marie Ellen: *See*—
Whiteley, William B., 4,201,214, Cl. 128-330.000.
Whiteley, William B., to Whiteley, Marie Ellen, a part interest. Applicators. 4,201,214, Cl. 128-330.000.
Whittingham, M. Stanley: *See*—
Johnson, Jack W.; and Whittingham, M. Stanley, 4,201,839, Cl. 429-194.000.
Whitworth, Eddie L.; and Russell, Ronald G., to United States of America, Navy. Data processing system. 4,202,040, Cl. 364-900.000.
Wicklund, June I. Auxiliary towel holder. 4,201,304, Cl. 211-87.000.
Widmer, Colin F., to James Brown & Sons Limited. Blast furnace tuyere. 4,201,372, Cl. 266-270.000.
Wiemer, Erich, to Krupp-Koppers GmbH. Device for crushing sinter and the like. 4,201,346, Cl. 241-66.000.
Wiles, Jerald R., to Rexham Corporation. Method of making, opening, filling and sealing a two-compartment pouch. 4,201,031, Cl. 53-455.000.
Wilhelm Mende & Company: *See*—
Schenz, Manfred, 4,201,819, Cl. 428-172.000.
Wilkins, Richard S. Submersible pump system using a submersible internal combustion engine. 4,201,524, Cl. 417-364.000.
Wilkinson Sword Limited: *See*—
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William Boulton Limited: *See*—
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William M. Bailey Company: *See*—
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Williams, Clarence. Martial arts practice bag. 4,201,379, Cl. 272-76.000.
Williams Gold Refining Company Incorporated: *See*—
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Williams, John A.: *See*—
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Williams, Smith J.; and Spector, George. Camping car. 4,201,412, Cl. 296-163.000.
Williamson, Elliott. Prefinished vinyl wall system. 4,201,025, Cl. 52-489.000.
Wilson, Bradford W. Skip rope. 4,201,382, Cl. 272-75.000.
Wilson, Eddie A.: *See*—
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Wirth, Alfred; Reimer, Hans; Mackert, Klaus; Diehl, Franz; and Splett, Klaus, to Fichtel & Sachs AG. Pressure accumulator. 4,201,246, Cl. 138-30.000.
Wisconsin Alumni Research Foundation: *See*—
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DeLuca, Hector F.; Schnoes, Heinrich K.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,201,881, Cl. 568-819.000.
Witt, Frank A., to Colite Industries, Inc. Apparatus forming three dimensional sign display character. 4,201,003, Cl. 40-545.000.
Witt, Frank A., to Colite Industries, Inc. Apparatus forming three dimensional sign display character. 4,201,004, Cl. 40-545.000.
Wittkamp, Heinrich: *See*—
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Wolanski, Bohdan: *See*—
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Wolbarsht, Mryon L. Method and apparatus for detecting the focusing condition of an optical system. 4,201,456, Cl. 353-101.000.

Wolf, Ludwig, Jr.: *See*—
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Wolf, Roger P., to Mine Safety Appliances Company. Filter pleating machine. 4,201,119, Cl. 93-60.000.

Wolinski, Leon E.; Riebling, Richard G.; and Edholm, John H., to Pratt & Lambert, Inc. Chemical milling of neoprene rubber. 4,201,732, Cl. 525-363.000.

Wollen, Carl H., to U.S. Industries. Impact absorbant article comprising frangible core having a tough-skinned covering and method of making same. 4,201,830, Cl. 428-375.000.

Wolverine Corporation: *See*—
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Wood, Ernest C.: *See*—
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Wood, Louis L.: *See*—
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Woods, William G.: *See*—
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Wooldridge, Derek: *See*—
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Wooldridge, Kenneth R. H.: *See*—
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Wooten, Richard L., to Moore Business Forms, Inc. Mailing wrapper. 4,201,332, Cl. 229-92.000.

Wootton, Gordon: *See*—
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Woschnagg, Elmar: *See*—
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Wu, Yulin; Johnson, Marvin M.; and Nowack, Gerhard P., to Phillips Petroleum Company. Catalyst and process for producing hydroperoxides. 4,201,875, Cl. 568-575.000.

Wydra, William T.: *See*—
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Xerox Corporation: *See*—
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Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, to Sumitomo Aluminium Smelting Company, Ltd. Method for the separation of precipitated aluminum hydroxide from sodium aluminate solution. 4,201,749, Cl. 423-127.000.

Yamaguchi, Kunihiko: *See*—
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Yamamoto, Setsuo: *See*—
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Yamanaka, Kenji, to Toyo Suisan Kaisha, Ltd. Handy container-pan for instantly frizzlable dry foods. 4,201,795, Cl. 426-110.000.

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Yamazaki, Noboru; Yuasa, Teruo; Morimoto, Yoshio; Aoi, Kunio; and Takase, Tsutomu, to Mitsui Toatsu Chemicals Inc. Process for producing a linear trimer of paraisopropenyl phenol. 4,201,877, Cl. 568-720.000.

Yanagihara, Hitoshi: *See*—
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Yazaki, Mutsunobu: *See*—
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Yokogawa Electric Works, Ltd.: *See*—
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Yonezawa, Toshio: *See*—
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Yoshikawa, Hiroshi; Kawakami, Akihiro; and Sato, Hideaki, to Hitachi, Ltd. Transportable telephone exchange apparatus. 4,202,029, Cl. 361-394.000.

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Yuasa Battery Co., Ltd.: *See*—
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Yuasa, Teruo: *See*—
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Yuta, Koichi, to Olympus Optical Co., Ltd. Lens system for micro film. 4,201,440, Cl. 350-1.200.

Zani, David A. Solar energy air heating device. 4,201,196, Cl. 126-450.000.

Zapp, Walter, to Creatcchnil Patent AG. Keyboard actuatable with the aid of the fingers of at least one hand. 4,201,489, Cl. 400-485.000.

Zickgraf, Karl, to Klockner-Humboldt-Deutz Aktiengesellschaft. Autoclave for carrying out of material conversions under high temperatures and high pressures. 4,201,745, Cl. 422-199.000.

Zidermane, Aina A.: *See*—
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Ziegler, William D., to General Electric Company. Food cutter for dishwasher. 4,201,345, Cl. 241-46.00R.

Zimmer, Peter; and Kudlich, Hans, to Maschinenfabrik Peter Zimmer Aktiengesellschaft. Method of an apparatus for equalizing longitudinal stresses in an advancing web. 4,201,132, Cl. 101-118.000.

Zink, John S.; and Reed, Robert D., to John Zink Company. Liquid fuels vaporization. 4,201,191, Cl. 126-360.00A.

Zirconal Processes Limited: *See*—
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Zoecon Corporation: *See*—
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Zondler, Helmut; and Lehmann, Hans, to Ciba-Geigy Corporation. Curable epoxide resin mixtures. 4,201,854, Cl. 528-121.000.

Zorzi, Paul A.; Jones, Jesse D.; and Kucsma, Michael E., to Ethyl Corporation. Polypivalolactone-polycarbonate blends. 4,201,703, Cl. 260-37.0PC.

Zosel, Kurt, to Studiengesellschaft Kohle mbH. Process for the separation of mixtures of various hydrocarbon compounds. 4,201,660, Cl. 208-86.000.

Zuk, Borys, to RCA Corporation. Circuit for producing sequentially spaced pulses. 4,201,927, Cl. 307-269.000.

Zumpano, Antonio. Driers for drying skeins of yarns and other purposes. 4,200,992, Cl. 34-58.000.

Zupancic, Boris, to LEK Tovarna Farmacevtskih in Kemicnih Izdelkov, n.sol.o. Process for the preparation of 2-(3-benzoylphenyl)-propionic acid. 4,201,870, Cl. 562-460.000.

Zygo Corporation: *See*—
Domenicali, Peter L.; and Hunter, George C., 4,201,473, Cl. 356-360.000.

LIST OF DEFENSIVE PUBLICATIONS

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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Buckberg, Gerald D.; and Dyson, Charles W. Hypothermic cardioplegia administration set. T994,001, 5-6-80, Cl. 128-214.00R.

Dyson, Charles W.: *See*—
Buckberg, Gerald D.; and Dyson, Charles W., T994,001, Cl. 128-214.00R.

Harvey, Frederick W.; Hess, Norman E.; and Sethi, Gurdip S. Battery package and assembly. T994,002, 5-6-80, Cl. 429-158.000.

Hess, Norman E.: *See*—
Harvey, Frederick W.; Hess, Norman E.; and Sethi, Gurdip S., T994,002, Cl. 429-158.000.

Kilminster, Kenneth N. Azo dyes, azo dye-releasing compounds and photographic products and processes employing them. T994,003, 5-6-80, Cl. 430-242.000.

Sethi, Gurdip S.: *See*—
Harvey, Frederick W.; Hess, Norman E.; and Sethi, Gurdip S., T994,002, Cl. 429-158.000.

Shawl, Edward T. Process for the preparation of diphenylmethane dicarbamates and polymethylene polyphenyl carbamates using solid acid catalysts. T994,004, 5-6-80, Cl. 560-25.000.

LIST OF REISSUE PATENTEES

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Beloit Corporation: *See*—
Justus, Edgar J., Re. 30,268, Cl. 162-360.00R.

Betz, Erwin C. Wood fly ash reduction method. Re. 30,269, Cl. 423-332.000.

Bruschi, Barbara J., to Eastman Kodak Company. Multilayer analytical element. Re. 30,267, Cl. 23-230.00B.

Dietz, Wolfgang F. W., to RCA Corporation. Side pincushion correction system. Re. 30,271, Cl. 315-370.000.

Eastman Kodak Company: *See*—
Bruschi, Barbara J., Re. 30,267, Cl. 23-230.00B.

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Piber, Earl T., Re. 30,270, Cl. 200-157.000.

Greene, Edwin R.; and Greene, Rodney F. Animal dryer. Re. 30,266, Cl. 34-86.000.

Greene, Rodney F.: *See*—
Greene, Edwin R.; and Greene, Rodney F., Re. 30,266, Cl. 34-86.000.

Justus, Edgar J., to Beloit Corporation. Hydrodynamically loaded web press with slipper bearing shoes. Re. 30,268, Cl. 162-360.00R.

Kupcikevicius, Vytautas; and Mika, Anton L., to Union Carbide Corporation. Presizing disc with self-locking means. Re. 30,265, Cl. 17-41.000.

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Piber, Earl T., to Eaton Corporation. Off locking in-line trigger switch. Re. 30,270, Cl. 200-157.000.

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Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,531, 5-6-80, Cl. 76.000.

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Mathis, Cleo D. Suction drain guard for swimming pools. 254,928, 5-6-80, Cl. D23-41.000.

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CLASSIFICATION OF PATENTS

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39 R 4,201,118
60 4,201,119

CLASS 98

2.14 4,201,122
4,201,123
33 R 4,201,121

CLASS 99

327 4,201,124
446 4,201,125
574 4,201,126

CLASS 100

7 4,201,127
45 4,201,128
233 4,201,129
271 4,201,130

CLASS 101

4 4,201,131
118 4,201,132
288 4,201,133
4,201,134

CLASS 102

56 SC 4,201,135
214 4,201,136

CLASS 104

69 4,201,137

CLASS 106

2 4,201,592
18.14 4,201,593
38.35 4,201,594
109 4,201,595

CLASS 108

55.1 4,201,138
109 4,201,139

CLASS 110

218 4,201,140
259 4,201,141

CLASS 111

7 4,201,142

CLASS 112

79 R 4,201,143
121.12 4,201,144
306 4,201,145

CLASS 114

163 4,201,146

CLASS 116

34 B 4,201,147
241 4,201,148

CLASS 118

52 4,201,149
323 4,201,150
642 4,201,151
712 4,201,152

CLASS 119

3 4,201,153
15 4,201,154
51 R 4,201,155
82 4,201,156
4,201,157
98 4,201,158

CLASS 123

32 EB 4,201,159
4,201,161
32 G 4,201,160
90.67 4,201,162
117 R 4,201,163
4,201,164
119 A 4,201,165
119 EC 4,201,166
122 AB 4,201,168
122 E 4,201,167
124 R 4,201,169
139 AW 4,201,172
139 BD 4,201,170
148 AC 4,201,171
148 C 4,201,173
188 B 4,201,174
191 M 4,201,175
196 M 4,201,176
198 D 4,201,178
198 F 4,201,179
4,201,180

CLASS 124

6 4,201,181
23 R 4,201,177
24 R 4,201,182
4,201,183

CLASS 126

39 J 4,201,184
77 4,201,185
83 4,201,186
110 E 4,201,187
360 A 4,201,191
422 4,201,192
429 4,201,188
4,201,189
448 4,201,193
449 4,201,194
4,201,195
450 4,201,190
4,201,196
451 4,201,197

CLASS 127

37 4,201,596

CLASS 128

4 4,201,198
7 4,201,199
66 4,201,200
76 C 4,201,201
79 4,201,202
80 C 4,201,203
201.13 4,201,206
203.27 4,201,204
205.25 4,201,205
214 F 4,201,207
214.2 4,201,208
218 P 4,201,209
260 4,201,210
268 4,201,211
275 4,201,212
312 4,201,213
330 4,201,214
335 4,201,215
335.5 4,201,216
342 4,201,217
402 4,201,218
419 PG 4,201,219
476 4,201,220
630 4,201,221
634 4,201,222
653 4,201,223
731 4,201,224
746 4,201,225
774 4,201,226

CLASS 130

8 4,201,227

CLASS 131

2 4,201,228
146 4,201,229
173 4,201,230
176 4,201,231
187 4,201,232
237 4,201,233
265 4,201,234

CLASS 132

7 4,201,235
40 4,201,236

CLASS 134

167 R 4,201,597

CLASS 135

2 4,201,237

CLASS 137

68 R 4,201,238
72 4,201,239
392 4,201,240
510 4,201,243
527 4,201,241
531 4,201,242
614.2 4,201,244
624.11 4,201,245

CLASS 138

30 4,201,246
141 4,201,247

CLASS 139

21 4,201,248

CLASS 141

39 4,201,249
250 4,201,250
284 4,201,251
286 4,201,252
392 4,201,253

CLASS 144

1 G 4,201,254
32 R 4,201,255
208 E 4,201,257
252 A 4,201,256

CLASS 145

46 4,201,258

CLASS 148

1.5 4,201,598
6.14 R 4,201,599
16.5 4,201,600
32 4,201,601
146 4,201,602
174 4,201,603
175 4,201,604

CLASS 149

19.1 4,201,605
37 4,201,606

CLASS 150

47 4,201,259

CLASS 152

357 A 4,201,261
361 DM 4,201,260

CLASS 156

70 4,201,607
72 4,201,608
85 4,201,609
96 4,201,610
155 4,201,611
224 4,201,612
270 4,201,613
273 4,201,614
304 4,201,615
307.1 4,201,616
351 4,201,617
380 4,201,618
384 4,201,619
494 4,201,620
567 4,201,621
605 4,201,622
622 4,201,623

CLASS 162

205 4,201,624
360 R Re.30,268

CLASS 165

117 4,201,262
146 4,201,263
162 4,201,264

CLASS 166

117.5 4,201,265
231 4,201,266
315 4,201,267

CLASS 172

804 4,201,268

CLASS 173

1 4,201,269
43 4,201,270
146 4,201,271

CLASS 174

139 4,201,883

CLASS 176

11 4,201,625

CLASS 179

1 A 4,201,886
2 DP 4,201,887
6 E 4,201,888
18 B 4,201,896
84 R 4,201,897
100.1 R 4,201,895

CLASS 180

6.48 4,201,272
12 4,201,273

CLASS 181

156 4,201,274

CLASS 182

37 4,201,275

CLASS 184

55 A 4,201,276

CLASS 188

196 D 4,201,277

CLASS 191

12.4 4,201,278

CLASS 192

3 N 4,201,279
18 A 4,201,280
35 4,201,281
98 4,201,282

CLASS 194

1 A 4,201,283

CLASS 196

14.52 4,201,626

CLASS 198

345 4,201,284
400 4,201,285
461 4,201,286
530 4,201,287
778 4,201,288

CLASS 200

61.45 R 4,201,898
153 R 4,201,899
157 Re.30,270
220 4,201,900

CLASS 201

39 4,201,627

CLASS 202

158 4,201,628
4,201,629
241 4,201,630

CLASS 203

1 4,201,631
51 4,201,632
58 4,201,633

CLASS 204

1 R 4,201,635
1 T 4,201,634
109 4,201,636
112 4,201,648
148 4,201,637
158 R 4,201,638
4,201,639
159.11 4,201,640
159.17 4,201,641
4,201,642
180 R 4,201,643
181 C 4,201,644
192 P 4,201,649
192 R 4,201,645
195 F 4,201,647
195 H 4,201,646
209 4,201,650
217 4,201,651
258 4,201,652
263 4,201,653
298 4,201,654

CLASS 206

0.5 4,201,289
38 4,201,290
44 R 4,201,291
4,201,292
45.14 4,201,294
45.19 4,201,293
4,201,300
174 4,201,295
205 4,201,296
349 4,201,297
387 4,201,298
507 4,201,301
554 4,201,299

CLASS 208

8 LE 4,201,655
11 LE 4,201,656
23 4,201,657
39 4,201,658
73 4,201,659
86 4,201,660
139 4,201,661
228 4,201,662

CLASS 209

577 4,201,302

CLASS 210

16 4,201,663
23 H 4,201,664
32 4,201,665
47 4,201,666
50 4,201,667
51 4,201,668
58 4,201,669
75 4,201,670
138 4,201,671
225 4,201,672
321 B 4,201,673
333 R 4,201,674
387 4,201,675

CLASS 211

41 4,201,303
87 4,201,304

CLASS 212

47 4,201,305

CLASS 219

10.55 C 4,201,901
69 M 4,201,902
78.12 4,201,903
98 4,201,904
121 L 4,201,905
137 PS 4,201,906

CLASS 220

5 R 4,201,306
62 4,201,307
81 R 4,201,308
235 4,201,309
256 4,201,310
307 4,201,311
314 4,201,312

CLASS 221

171 4,201,313
198 4,201,314

CLASS 222

66 4,201,315
80 4,201,316
207 4,201,317
324 4,201,318
396 4,201,319
456 4,201,320
478 4,201,321

CLASS 224

45 AB 4,201,322

CLASS 226

97 4,201,323

CLASS 227

9 4,201,324
4,201,325

CLASS 228

50 4,201,326
176 4,201,327

CLASS 229

4.5 4,201,328
17 SC 4,201,329
33 4,201,330
39 R 4,201,331
92 4,201,332

CLASS 232

7 4,201,333
34 4,201,334

CLASS 233

26 4,201,335

CLASS 235

92 AC 4,201,907
92 TC 4,201,908
200 WB 4,201,336
303.2 4,201,337
454 4,201,338
487 4,201,339

CLASS 239

66 4,201,340
79 4,201,341
128 4,201,342
189 4,201,343
242 4,201,344

CLASS 241

46 R 4,201,345
66 4,201,346
92 4,201,347
101 B 4,201,348
247 4,201,349
298 4,201,350

CLASS 242

56 B 4,201,351
56.2 4,201,352
68.5 4,201,353
71.7 4,201,354
84.1 R 4,201,355
197 4,201,356

CLASS 244

153 R 4,201,357

CLASS 248

283 4,201,358
345.1 4,201,359

CLASS 249

140 4,201,360
183 4,201,361

CLASS 250

216 4,201,910
231 SE 4,201,911
253 4,201,912
288 4,201,913
341 4,201,914
343 4,201,915
372 4,201,916
431 4,201,917
433 4,201,918
468 4,201,919
492 B 4,201,920
493 4,201,921

CLASS 251

29 4,201,362
62 4,201,363
175 4,201,364
328 4,201,365
335 B 4,201,366

CLASS 252

1 4,201,676
8.1 4,201,677
8.5 A 4,201,678
4,201,679
8.6 4,201,680
32.7 E 4,201,683
33.2 4,201,681
33.4 4,201,682
47.5 4,201,684
102 4,201,687
174.22 4,201,686
180 4,201,688
184 4,201,689
301.1 W 4,201,690
314 4,201,691
372 4,201,692
408 4,201,693
4,201,694
411 R 4,201,695
442 4,201,696
522 R 4,201,697

CLASS 254

67 4,201,367
131 4,201,368
193 4,201,369

CLASS 260

3 4,201,698
7 4,201,699
4,201,700
22 CQ 4,201,701
28.5 AS 4,201,702
37 PC 4,201,703
40 R 4,201,704
45.8 NT 4,201,705
112 G 4,201,708
123.5 4,201,709
156 4,201,710
162 4,201,707
244.4 4,201,712
340.9 R 4,201,714
345.7 R 4,201,715
397.4 4,201,716
397.45 4,201,717
409 4,201,718
429 R 4,201,719
463 4,201,720
4,201,721
570 AB 4,201,723
570 D 4,201,722
577 4,201,724
583 H 4,201,725
665 R 4,201,729
968 4,201,733

CLASS 261

34 B 4,201,734
39 E 4,201,735
98 4,201,736
142 4,201,737

CLASS 264

0.5 4,201,738
13 4,201,739
38 4,201,740
40.1 4,201,741
45.5 4,201,742
148 4,201,743
157 4,201,711
250 4,201,744

CLASS 266

44 4,201,370
50 4,201,371
270 4,201,372
271 4,201,373

CLASS 269

37 4,201,374
46 4,201,375
156 4,201,376

CLASS 271

225 4,201,377
261 4,201,378

CLASS 272

75 4,201,382
76 4,201,379
117 4,201,380

CLASS 273

73 F 4,201,381
94 4,201,383
102.4 4,201,385
199 R 4,201,384
236 4,201,386
243 4,201,387
251 4,201,388
272 4,201,389

CLASS 274

15 R 4,201,390

CLASS 277

30 4,201,391
92 4,201,393
165 4,201,392

CLASS 279

2 R 4,201,394

CLASS 280

11.37 M 4,201,395
229 4,201,396
280 4,201,397
289 L 4,201,398
402 4,201,399
511 4,201,400
803 4,201,401

CLASS 282

9 A 4,201,402
27.5 4,201,404

CLASS 283

4 4,201,405
21 4,201,403

CLASS 285

3 4,201,406
304 4,201,407

CLASS 290

38 R 4,201,922
40 R 4,201,923
4,201,924
52 4,201,925

CLASS 294

1 BA 4,201,409
1 CA 4,201,408
83 R 4,201,410

CLASS 296

50 4,201,411
163 4,201,412
165 4,201,413
169 4,201,414
190 4,201,415

CLASS 297

184 4,201,416
442 4,201,417
474 4,201,418

CLASS 299

2 4,201,419
4,201,420
86 4,201,421

CLASS 303

10 4,201,422

CLASS 307

141 4,201,926
269 4,201,927
270 4,201,928

CLASS 308

6 C 4,201,424
6 R 4,201,423
26 4,201,426
236 4,201,425

CLASS 310

49 R 4,201,929
51 4,201,930

CLASS 312

21 4,201,427
257 R 4,201,428
330 R 4,201,429

CLASS 315

10 4,201,931
13 C 4,201,932
16 4,201,933
151 4,201,934
370 Re.30,271

CLASS 318

15 4,201,935
341 4,201,936
568 4,201,937

CLASS 320

68 4,201,889

CLASS 323

43.5 R 4,201,938

CLASS 324

158 P 4,201,939
207 4,201,940
321 4,201,941

CLASS 329

2 4,201,946

CLASS 330

253 4,201,947

CLASS 331

8 4,201,948
94.5 C 4,201,954
94.5 D 4,201,951
4,201,952
94.5 G 4,201,950
4,201,955
94.5 PE 4,201,949
4,201,953
96 4,201,956
110 4,201,957

CLASS 332

11 D 4,201,958

CLASS 333

16 4,201,959
17 M 4,201,960
24.1 4,201,961
25 4,201,962
106 4,201,963
151 4,201,964

CLASS 336

180 4,201,965
217 4,201,966

CLASS 337

354 4,201,967

CLASS 338

28 4,201,968
180 4,201,969
195 4,201,970

CLASS 339

5 M 4,201,430
14 L 4,201,433
14 P 4,201,431
14 R 4,201,432
28 4,201,434
59 M 4,201,435
96 4,201,436
121 4,201,437
144 R 4,201,438
259 R 4,201,439

CLASS 340

26 4,201,973
52 A 4,201,974
84 4,201,975
146.3 C 4,201,978
146.3 H 4,201,977
181 4,201,979
347 DD 4,201,980
380 4,201,981
506 4,201,982
709 4,201,983
763 4,201,984
785 4,201,985

CLASS 343

14 4,201,986
703 4,201,987
715 4,201,988
4,201,989
747 4,201,990
840 4,201,991
4,201,992

CLASS 346

75 4,201,993
108 4,201,994
140 R 4,201,995
158 4,201,996

CLASS 350

1.2 4,201,440
3.61 4,201,441
96.14 4,201,442
96.20 4,201,443
96.21 4,201,444
4,201,445
96.29 4,201,446
96.31 4,201,447
99 4,201,448
117 4,201,449
150 4,201,450
278 4,201,451
288 4,201,452
340 4,201,453
357 4,201,454
358 4,201,455

CLASS 353

101 4,201,456

CLASS 354

86 4,201,457
4,201,463
136 4,201,458
147 4,201,459
171 4,201,460
272 4,201,461
289 4,201,462

CLASS 355

14 R 4,201,464
15 4,201,465
104 4,201,466

CLASS 356

28 4,201,467
28.5 4,201,468
36 4,201,469
39 4,201,470
70 4,201,471
226 4,201,472
360 4,201,473
369 4,201,474
381 4,201,475
386 4,201,476
434 4,201,477
440 4,201,478
445 4,201,479

CLASS 357

15 4,201,997
4,201,998
4,201,999
4,202,003
19 4,202,000
22 4,202,001
4,202,002
30 4,202,004
51 4,202,005
63 4,202,006
80 4,202,007

CLASS 358

22 4,202,008
32 4,202,009
56 4,202,010
136 4,202,011
147 4,202,012
158 4,202,013
228 4,202,014
237 4,202,015

CLASS 360

40 4,202,016
45 4,202,017

47 4,202,018
51 4,202,019
75 4,202,020
96.5 4,202,021
114 4,202,022

CLASS 361

18 4,202,023
91 4,202,024
103 4,202,025
119 4,202,026
338 4,202,027
343 4,202,028
394 4,202,029

CLASS 362

61 4,202,030

CLASS 363

97 4,202,031
126 4,202,032

CLASS 364

200 4,202,035
416 4,202,033
420 4,202,034
4,202,036
518 4,202,037
709 4,202,038
757 4,202,039
900 4,202,040
4,202,041
4,202,042

CLASS 365

15 4,202,043
182 4,202,044
203 4,202,045
222 4,202,046

CLASS 366

79 4,201,480
4,201,481
98 4,201,482
139 4,201,483
153 4,201,484
156 4,201,485
196 4,201,486
304 4,201,487

CLASS 367

1 4,202,047
40 4,201,972
4,202,048
95 4,201,971
96 4,202,049
105 4,202,050

CLASS 368

10 4,201,043
35 4,201,040
73 4,201,038
85 4,201,041
170 4,201,042
241 4,201,039

CLASS 370

58 4,201,891
4,201,893
4,201,894
68 4,201,890
104 4,201,892

CLASS 371

50 4,201,976

CLASS 375

2 4,202,051
17 4,201,942
53 4,201,884
106 4,201,885

CLASS 400

121 4,201,488
485 4,201,489

CLASS 401

175 4,201,490
264 4,201,491

CLASS 402

54 4,201,492

CLASS 404

117 4,201,493

CLASS 405

17 4,201,494
63 4,201,495
79 4,201,496
150 4,201,497
303 4,201,498

CLASS 406

75 4,201,499

CLASS 407

43 4,201,500
92 4,201,501

CLASS 408

1 R 4,201,502
215 4,201,503

CLASS 414

27 4,201,504
4,201,505
68 4,201,506
331 4,201,507
525 R 4,201,508
694 4,201,509
730 4,201,510
738 4,201,511

CLASS 415

90 4,201,512

CLASS 416

2 4,201,513
37 4,201,514
134 A 4,201,515
213 R 4,201,516

CLASS 417

12 4,201,517
4,201,518
36 4,201,520
38 4,201,519
53 4,201,521
311 4,201,522
312 4,201,523
364 4,201,524
477 4,201,525

CLASS 418

136 4,201,526

CLASS 422

199 4,201,745
250 4,201,746

CLASS 423

21.5 4,201,747
27 4,201,748
127 4,201,749
162 4,201,750
210 4,201,751
235 4,201,752
242 4,201,753
4,201,754
4,201,755
266 4,201,756
290 4,201,757
332 Re.30,269
497 4,201,758
567 A 4,201,759
600 4,201,760
633 4,201,761
4,201,762

CLASS 424

8 4,201,763
45 4,201,764
4,201,765
70 4,201,766
78 4,201,706
89 4,201,767
92 4,201,768
117 4,201,769
177 4,201,770
4,201,771
180 4,201,772
4,201,773
4,201,774
4,201,775
195 4,201,776
241 4,201,778
246 4,201,779
4,201,780
4,201,781
248.51 4,201,782
256 4,201,783
258 4,201,784
274 4,201,785
282 4,201,786
304 4,201,787
4,201,788
305 4,201,789
330 4,201,790
358 4,201,791

CLASS 425

72 R 4,201,527
209 4,201,528
238 4,201,529
260 4,201,530
290 4,201,531
380 4,201,532
451.9 4,201,533
461 4,201,534
548 4,201,535

CLASS 426

15 4,201,792
92 4,201,793
96 4,201,794
110 4,201,795
238 4,201,796

CLASS 427

66 4,201,797
74 4,201,798
142 4,201,799
274 4,201,801
370 4,201,802
381 4,201,803
389 4,201,805
393.6 4,201,804

CLASS 428

4 4,201,806
35 4,201,807
40 4,201,808
65 4,201,809
90 4,201,810
92 4,201,811
95 4,201,812
97 4,201,813
107 4,201,814
113 4,201,815
137 4,201,816
141 4,201,817
159 4,201,818
172 4,201,819
195 4,201,820
203 4,201,821
212 4,201,777
240 4,201,822
246 4,201,823
262 4,201,824
263 4,201,825
268 4,201,826
283 4,201,827
288 4,201,835
332 4,201,828
4,201,829
375 4,201,830
403 4,201,831
404 4,201,833
407 4,201,834
412 4,201,832
457 4,201,836
4,201,837

CLASS 429

145 4,201,838
194 4,201,839

CLASS 430

5 4,201,800
17 4,201,840
97 4,201,583
114 4,201,685
139 4,201,589
167 4,201,588
222 4,201,578
224 4,201,587
281 4,201,842
319 4,201,580
323 4,201,579
351 4,201,582
376 4,201,585
389 4,201,584
396 4,201,581
567 4,201,841
617 4,201,590
619 4,201,591
621 4,201,586

CLASS 431

88 4,201,536
344 4,201,537
351 4,201,538
354 4,201,539
361 4,201,540

CLASS 432

58 4,201,541
106 4,201,546
128 4,201,542
217 4,201,543
222 4,201,544
239 4,201,545

CLASS 433

7 4,200,979
8 4,200,980
60 4,200,981

CLASS 435

76 4,201,843
135 4,201,844
285 4,201,845

CLASS 455

155 4,201,944
183 4,201,945
185 4,201,943
608 4,201,909

CLASS 521

137 4,201,846
172 4,201,847

CLASS 525

314 4,201,848
363 4,201,732
398 4,201,857
401 4,201,849

CLASS 526

337 4,201,850

CLASS 528

1 4,201,851
67 4,201,852
85 4,201,853
121 4,201,854
125 4,201,855
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